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December 11, 2009

TDD No.: TO2-09-09-09-0002

Contract No.: EP-S5-08-01

E&E Project No.: 002693.2053.01RA

Robert Wise, Federal On-Scene Coordinator
Chris Weden, Federal On-Scene Coordinator
United States Environmental Protection Agency
Emergency Response Section
2250 Obispo Avenue, Suite 102
Signal Hill, CA 90755

Subject: Halaco Building Assessment Letter Report
6200 Perkins Road, Oxnard, Ventura County, California
Latitude: 34° 08' 19.43" North, Longitude: 119° 10' 58.58" West

INTRODUCTION

The United States Environmental Protection Agency (U.S. EPA) Emergency Response Section (ERS) Federal On-Scene Coordinator (FOSC), Robert Wise, tasked Ecology and Environment, Inc.'s Superfund Technical Assessment and Response Team (START) to provide support during a removal assessment of two buildings at Halaco Engineering Company (Halaco) in Oxnard, Ventura County, California. The focus of this investigation was to determine the presence or absence of radiological surface, heavy metals, and other chemical contamination throughout the smelter and baghouse buildings to aid in the planning for potential building demolition.

SITE DESCRIPTION

The Halaco site is located at 6200 Perkins Road in Oxnard, Ventura County, California, approximately 14 miles southwest of U.S. Highway 101 (Attachment A, Figure 1). The site is bordered to the north by the Weyerhaeuser Company Hueneme Paper Mill, to the east by Nature Conservancy Lands, and to the south and west by Ormond Beach, Ormond Beach Lagoon, and the Ormond Beach Wetlands. The site is bisected by the Oxnard Industrial Drain (OID), which drains to the Pacific Ocean approximately 300 feet to the south of the Halaco property. The waste disposal parcel of the property is located to the east of the OID and is approximately 26 acres in size. The smelter facility is located on the west side of the OID and consists of approximately 11 acres (Attachment A, Figure 2). A fence surrounds the site perimeter, but indications of trespassing and vandalism are obvious throughout the site.

The focus of the U.S. EPA ERS removal assessment was two dilapidated structures located on smelter facility portion of the property: the smelter building and the baghouse building. The smelter building is approximately 37,200 square feet (ft²) in size, and the baghouse building is approximately 8,400 ft² in size (Attachment A, Figure 3 and 4). The buildings are essentially empty structures; waste and raw material were removed from the site during previous U.S. EPA-

led site activities. Four furnace structures are located inside the smelter building, and each furnace contains solid residue. Two above-ground storage tanks (ASTs) are located inside the baghouse building, and both ASTs contain very small amounts of tank bottom solid residue. Dusts from the smelter building connect to the baghouse building and the adjacent baghouse. Sub-floor vaults exist in each building and contain residue solid material from site operations (Attachment A, Figure 3 and 4). Both buildings are in poor structural condition (Attachment B). The City of Oxnard Building and Engineering Services approved of the U.S. EPA and START investigation approach, but warned that intrusive sampling activities were not to be conducted given the questionable structural integrity of the buildings.

BACKGROUND

Halaco conducted metal recycling operations at the facility from 1964 to 2004. Scrap metal, including low-level radioactive material, was processed at the site. Aluminum and magnesium from shredded cans, machine shop borings, aluminum-copper radiators, and blocks of partially processed scrap aluminum from other countries was recycled by Halaco. In 2002, Halaco filed for bankruptcy protection and reorganization under Chapter 11 of the U.S. Bankruptcy Code, and later ceased operations in 2004. The U.S. Bankruptcy Court converted the case to Chapter 7, liquidation bankruptcy, in 2006. An in-depth file review for Halaco was conducted by the START in 2006, and a detailed site and regulatory history was prepared under Technical Directive Document (TTD) No. 09-05-11-0002.

In 2006 and 2007, site assessments led by the U.S. EPA indicated the presence of various heavy metal contamination and cesium-137, potassium-40, thorium-228, thorium-230, and thorium-232 radioactive contamination in the soil in the southeast corner of the smelter facility and in the waste disposal area. In 2006, the START was tasked to provide potential responsible party (PRP) oversight for the cleanup, consolidation, and removal of potential state and federal hazardous waste from the site. An U.S. EPA-led stabilization and removal action in 2007 focused on the stabilization of the waste management unit located on the waste disposal parcel of the property. Additional detail regarding the PRP oversight activities and the U.S. EPA-led site stabilization and removal action are summarized in a START report prepared under TDD No. 09-06-04-0007.

The Halaco site has been listed on the U.S. EPA Superfund Program National Priority List since 2007. The Comprehensive Environmental Response, Compensation, and Liability Information System Identification Number for the Halaco site is CAD009688052.

ACTION LEVELS

Radiological action levels for surface contamination were established utilizing the guidance outlined in the U.S. Department of Energy (DOE) Order 5400.5, Radiation Protection of the Public and Environment, Change 2, dated January 7, 1993 which were clarified and amended in the DOE memorandum: Application of DOE 5400.5 requirements for release and control of property containing residual radioactive material, November 17, 1995 from Air, Water, and Radiation Division, EH-412. The Surface Activity Guidelines, Allowable Total Residual Surface Activity, are established in disintegrations per minute per 100 square centimeters (dpm/ 100 cm²). As used in this table, dpm means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation. Static surface radiological

measurements were compared to the average and maximum acceptable surface contamination levels, and radiological dust wipe sample results were compared to the removable acceptable surface contamination level.

DOE Order 5400.5 Acceptable Surface Contamination Levels			
Radionuclide¹	Average^{2,3}	Maximum⁴	Removable⁵
Thorium-228, Thorium-230	100 dpm/100 cm ²	300 dpm/100 cm ²	20 dpm/100 cm ²
Thorium-232	1,000 dpm/100 cm ²	3,000 dpm/100 cm ²	200 dpm/100 cm ²
Beta-gamma emitters (Cesium-137 and Potassium-40)	5,000 dpm/100 cm ²	15,000 dpm/100 cm ²	1,000 dpm/100 cm ²
Notes: 1 = Where surface contamination by both alpha- and beta-gamma-emitting radionuclides exists, the limits established for alpha- and beta-gamma-emitting radionuclides should apply independently. 2 = Measurements of average contamination should not be averaged over an area of more than 1 m ² . 3 = The average and maximum dose rates associated with surface contamination resulting from beta-gamma emitters should not exceed 0.2 mrad/h and 1.0 mrad/h, respectively, at 1 cm. 4 = The maximum contamination level applies to an area of not more than 100 cm ² . 5 = The amount of removable material per 100 cm ² of surface area should be determined by wiping an area of that size with dry filter or soft absorbent paper, applying moderate pressure, and measuring the amount of the radioactive material on the wiping with an appropriate instrument of known efficiency.			

Action levels for metals, volatile organic compounds (VOCs), and total petroleum hydrocarbons as diesel (TPH-d) in solid samples were based on the U.S. EPA Region IX Regional Screening Levels for Industrial Soil (iRSL) published in April 2009. Action levels for solids analyzed by alpha and gamma spectroscopy were based on the U.S. EPA Preliminary Remediation Goals for Radionuclides in residential soil (rPRG) published in February 2002.

Action levels for metals in dust wipes were based on the laboratory reporting limits to determine the presence or absence of each California Title 22 metal. The presence of metals from the dust samples were also compared to the solid sample metal results to better understand if state or federal hazardous waste existed.

U.S. EPA AND START ASSESSMENT ACTIVITIES

On September 21, 2009, the START participated in a site reconnaissance with FOSCs Robert Wise and Chris Weden and a response manager from the U.S. EPA Emergency and Rapid Removal Services contractor (ERRS). The U.S. EPA also held a site information meeting with representatives from the City of Oxnard Fire Department Certified Unified Program Agency, City of Oxnard Building and Engineering Services, and the City of Oxnard Water Resources Department during the reconnaissance visit. Between October 21 and 23, 2009, the START conducted an assessment of building substrates at Halaco with FOSC Chris Weden and a ERRS response manager. The assessment focused on the investigation of two structures located on the property. The START collected photographic documentation of site conditions and site activities during the two site visits (Attachment B). Prior to the beginning of site operations, the START prepared a site-specific Health and Safety Plan (HASP) in accordance with the requirements

pursuant to 29 Code of Federal Regulations (CFR) part 1910.120(b)(4). A copy of the HASP is included in the START project file.

The START prepared an *Emergency Response and Time Critical Quality Assurance Sampling Plan for Soil, Water, and Miscellaneous Matrix Sampling* (ER-QASP) to outline the procedures required to collect static radiological surface measurements, surface dust wipe samples, and surface solid samples (Attachment C). The data use objectives described in the ER-QASP were:

- To assist in determining the presence or absence of a hazardous material or substance at levels above an available detection or quantification limit.
- To be compared with site-specific action levels or risk-based action levels to assist in determination if health threats exist.

Throughout the smelter and baghouse buildings judgmental sampling locations were identified, which took into consideration the various substrates and building materials present in the two structures. The judgmental sample locations were selected at various heights throughout each structure, including the building roofs and ceiling rafters.

Radiological instrumentation used during the assessment were evaluated under a quality control (QC) program to document that detectors were within annual calibration, and were operating within daily QC parameters. Daily QC checks were performed at the beginning of the day before starting field work, and at the end of the day prior to leaving the field. Calibration sheets and annual calibration certificates are located in the START project file. Background radiation measurements were taken from an area to the west of the smelter building believed to be free of radiation contamination. Background alpha and beta measurements were obtained utilizing the instruments used during the investigation. Background readings were obtained for each type of substrate/building material for each instrument used in the investigation. Attachment D, Table 1 summarizes the background radiological measurements.

The U.S. EPA, START, and ERRS organized into two teams and collected the following samples during the assessment:

- 72 radiation surface measurements and wipe samples and 7 field duplicates for assessment of alpha and beta contamination
- 17 dust wipe samples, 2 dust wipe duplicates, and 2 dust wipe blanks for assessment of metals contamination
- 9 solid samples and 1 field duplicate for assessment of metals, volatile organic compounds (VOCs), total petroleum hydrocarbons as diesel and motor oil (TPH-d), and alpha and gamma spectroscopy analysis

All sampling was conducted in accordance with the ER-QASP and applicable Standard Operating Procedures (without exceptions) or (with the following exceptions):

The sample teams collected radiation surface measurements and/or radiation surface wipe samples at 72 locations throughout the smelter and baghouse buildings. In the smelter building, 54 locations and five field duplicate locations were sampled. In the baghouse building, 18

locations and two field duplicate locations were sampled (Attachment A, Figures 5 and 6). At each sampling location a static radiological surface measurement was taken along with a radiological wipe sample. Static radiological surface measurements were utilized to determine average and maximum surface alpha and beta radiological contamination. The sample teams utilized the following instruments to obtain the static radiological surface measurements:

- Team 1: Ludlum Model 2241-3 ratemeter/scaler with a Ludlum Model 43-90 alpha scintillator detector and a Ludlum Model 2221 ratemeter/scaler with a Ludlum Model 44-116 beta scintillator detector.
- Team 2: Ludlum Model 2360 ratemeter/scaler with a Ludlum Model 43-93 alpha and beta scintillator detector.

Attachment D, Table 2 summarizes the static radiation surface measurements obtained by the sample teams. Static surface measurements were obtained utilizing the Ludlum instruments identified earlier in this report. The detectors were placed on contact with the sampling surface to collect a one minute scaler count in counts per minute (cpm) from a 100 cm² area. The following equation was utilized to convert cpm to dpm for comparison to the DOE Order 5400.5 Acceptable Surface Contamination Levels:

$$\text{dpm} = \frac{\text{surface result in cpm} - \text{background result in cpm}}{\text{instrument efficiency} \times \text{surface efficiency}}$$

Radiological wipe samples were collected following the U.S. EPA Environmental Response Team (ERT) Standard Operation Procedure (SOP) No. 2011 for Chip, Wipe and Sweep Sampling. The radiological wipe samples were analyzed in the field for removable alpha and beta radiation contamination utilizing a Ludlum Model 3030 alpha and beta sample counter to obtain results in dpm. Attachment D, Table 3 summarizes the radiological wipe sample results.

Dust wipe samples were collected at judgmental sample locations throughout the smelter and baghouse buildings following U.S. EPA SOP No. 2011. A total of 21 dust wipe samples were collected. Ten samples were collected from the smelter building, seven samples were collected from the baghouse building, and two duplicates and two field blanks were collected (Attachment A, Figures 5 and 6). The dust wipe samples were shipped to an off-site analytical laboratory for analysis of metals by EPA SW-846 Method 6010B. Attachment D, Table 4 summarizes the dust wipe sample results.

Solid samples were collected from judgmental sample locations during the building assessment (Attachment A, Figure 7). Solid samples were collected of the material/soil from the building floors, vaults, duct work, and furnaces utilizing a dedicated disposable sampling scoop. Each sample was homogenized in a plastic bag, transferred into glass jars for shipment to an on-site analytical laboratory, labeled and custody sealed. Composite samples were taken of the material from the floor of each building, the material in a containment sub-floor vault from each building, the material in the smelter furnaces located in the smelter building, and from the baghouse structure south of the baghouse building. Grab samples were taken from the duct work inside the smelter building, from solid material located on the top of the control room in the smelter building and from the smelter furnace located in the west room of the smelter building. Solid samples were shipped to an off-site analytical laboratory for metals analysis by EPA SW-846

Method 6010B, VOCs by EPA SW-846 Method 8260B, TPH-d by EPA SW-846 Method 8015M, alpha spectrometry by DOE Environmental Measurements Laboratory (EML) Procedures Manual (HASL 300), Th-01-RC Modified, and gamma spectrometry by DOE HASL 300, 4.5.2.3/Ga-01-R. Attachment D, Table 5 summarizes the solid samples results.

All dust wipe and solid samples were submitted to GEL Laboratories, LLC in Charleston, South Carolina, on October 26, 2009, under a START subcontract mechanism using appropriate chain-of-custody procedures. The data were validated in accordance with qualification guidelines stated in the START 3 Procedures for Tier 2 Data Validation of U.S. EPA ERS data, presented in the START Quality Assurance Project Plan, validated laboratory results are presented in Attachment E. This procedure follows guidelines derived from the U.S. EPA Region IX Superfund Data Evaluation/Validation Guidance R9QA/006.1; *EPA CLP National Functional Guidelines for Superfund Organic Data Review*, (EPA 540/R-08-01, 2008); *EPA CLP National Functional Guidelines for Inorganic Data Review* (EPA 540-R-04-004, 2004); and *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan*. All data was found to be acceptable for the project data use objectives.

DISCUSSION OF ANALYTICAL RESULTS

Static surface radiological measurements were compared to the DOE Order 5400.5 Acceptable Surface Contamination Levels for maximum and average radiological contamination. No alpha or beta maximum surface contamination action levels were exceeded; therefore, no additional radiological surveys were required to determine if the average surface contamination levels would be exceeded. Radiological wipe sample were compared to the DOE Order 5400.5 Acceptable Surface Contamination Levels for removable radiological contamination. No alpha or beta results from the radiological wipe samples exceeded the action level for removable surface contamination. Dust wipe samples indicated the presence of all the California Title 22 metals throughout both structures; however, solid samples taken from the floor of each building indicated that no California Title 22 metals exceeded the California Total Threshold Limit Concentration (TTLC) for a state hazardous waste. Arsenic was found above the iRSL at all solid sample locations. Solid samples from the smelter building floor, sub-floor vault and from all furnaces exceed soil rPRGs for potassium-40. Baghouse building solid samples from the building floor, sub-floor vault, and baghouse solids also exceeded the potassium-40 rPRG for soil. Solid samples from the baghouse building sub-floor vault also indicated radium-228 above the rPRG for soil.

A limited number of laboratory analytical results were qualified as estimated based on field duplicate relative percent difference (RPD). Duplicate dust wipe and solid matrix samples were collected as part of this project and met the collection frequency criteria stated in the ER-QASP. Field duplicates generally are a measure of total error (precision) related to sample heterogeneity, methodology, and analytical procedures. Based on the document referenced above, National Functional Guidelines for Inorganic Data Review, there are no official acceptance criteria for the RPD related to field duplicate samples. The ER-QASP indicates that for dust wipe and soil samples acceptable duplicate RPDs are less than 35 percent. All RPD calculations and explanations are presented in the data validation reports (Attachment E).

SUMMARY AND CONCLUSION

The START was tasked by FOSC Robert Wise to conduct a removal assessment of two dilapidated structures on the Halaco site to determine the presence of hazardous waste to aid in building demolition planning. Direct radiological measurements, radiological wipe samples, dust wipe samples, and solid samples were collected by the START during the assessment. Based on the radiological static surface measurements and wipe samples, no radiological contamination above the DOE published acceptable maximum, average, and removable surface contamination is present inside the two buildings at the sample locations. Dust wipe sample indicated the presence of California Title 22 metals, but solid samples taken from each buildings floor did not indicate that state or federal hazardous waste criteria were exceeded. Arsenic was present above the iRSL at all locations sample for solids. Potassium-40 was present above the rPRG at four smelter building and three baghouse building locations. Radium-228 was also present above the rPRG in the baghouse building sub-floor vault.

This report concludes all activities conducted by the START with regards to the Halaco Building Assessment. If you have any questions regarding START activities associated with the project, please do not hesitate to contact me.

Respectfully submitted,



Daniel Haag
START Project Manager

Attachment A: Figures:

- Figure 1 – Site Vicinity Map
- Figure 2 – Site Features Map
- Figure 3 – Smelter Building Features
- Figure 4 – Baghouse Building Features
- Figure 5 – Smelter Building Sample Locations
- Figure 6 – Baghouse Building Sample Locations
- Figure 7 – Solid Sample Locations

Attachment B: Photo Documentation

Attachment C: Emergency Response and Time Critical Quality Assurance Sampling Plan

Attachment D: Tables

- Table 1 – Summary of Background Radiation Results
- Table 2 – Summary of Static Radiological Measurements
- Table 3 – Summary of Radiological Wipe Samples
- Table 4 – Summary of Dust Wipe Sample Results
- Table 5 – Summary of Solid Sample Results

Attachment E: Validated Data Reports

cc: Electronic Deliverable System 2
START Project File



**ATTACHMENT A:
FIGURES**



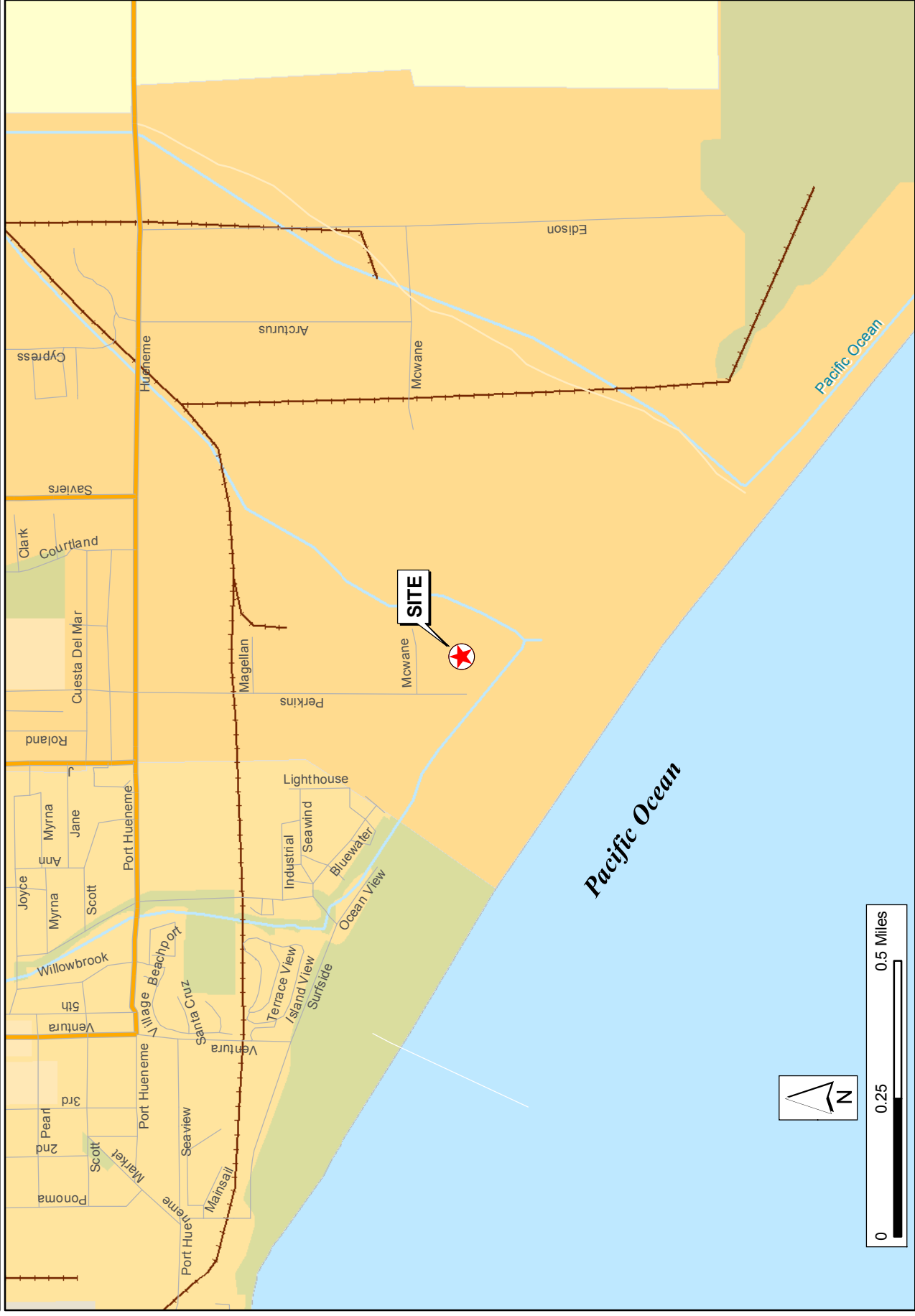


Figure 1
Site Vicinity Map
Halaco Building Assessment
6200 Perkins Road, Oxnard, Ventura County, California

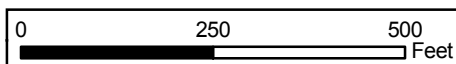
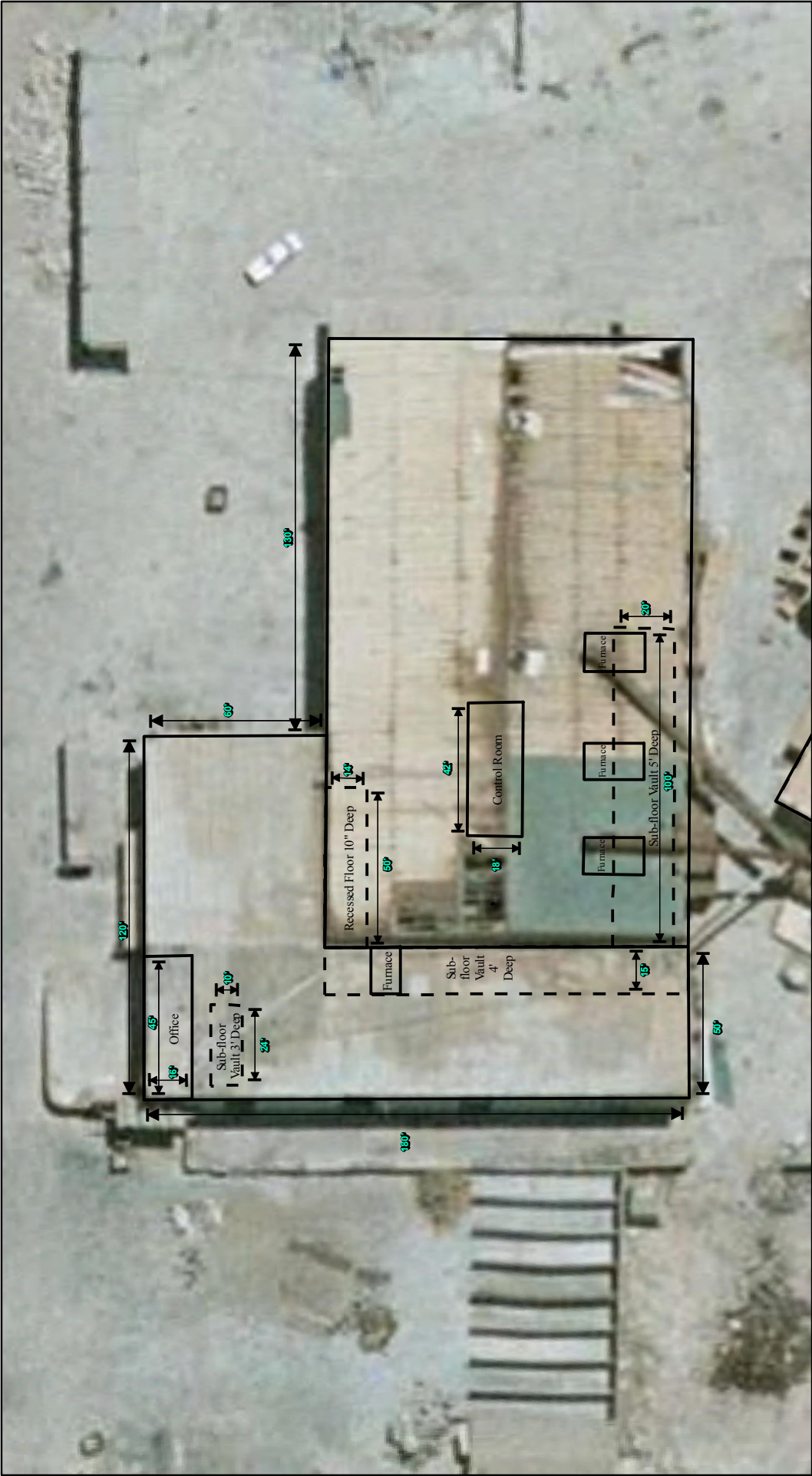


Figure 2
Site Features
Halaco Building Assessment
6200 Perkins Road, Oxnard,
Ventura County, California



LEGEND

 Sub-floor vault

Figure 3
Smelter Building Features
Halaco Building Assessment
6200 Perkins Road, Oxnard,
Ventura County, California

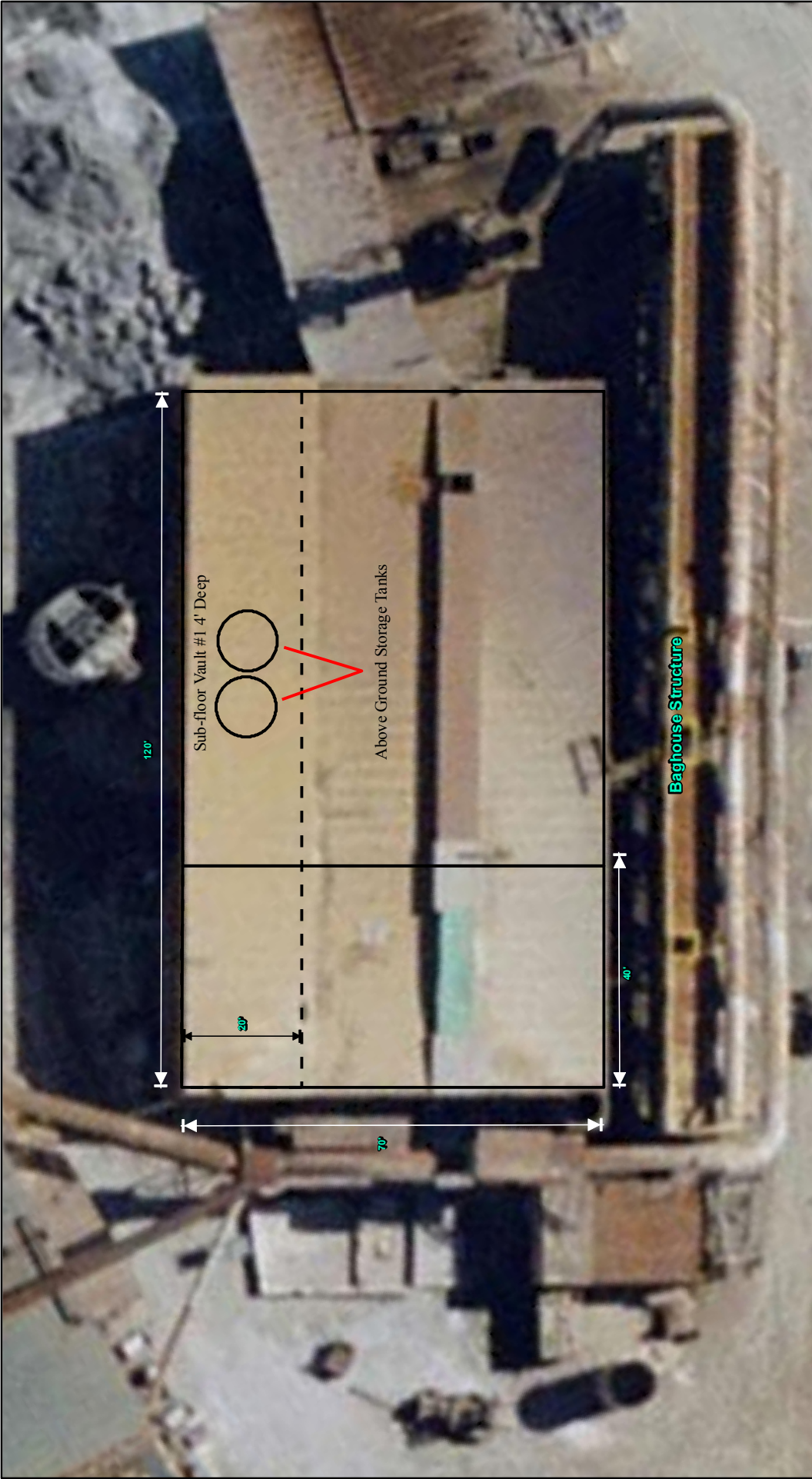


Figure 4

Baghouse Building Features Halaco Building Assessment 6200 Perkins Road, Oxnard, Ventura County, California



LEGEND

-  Sub-floor vault



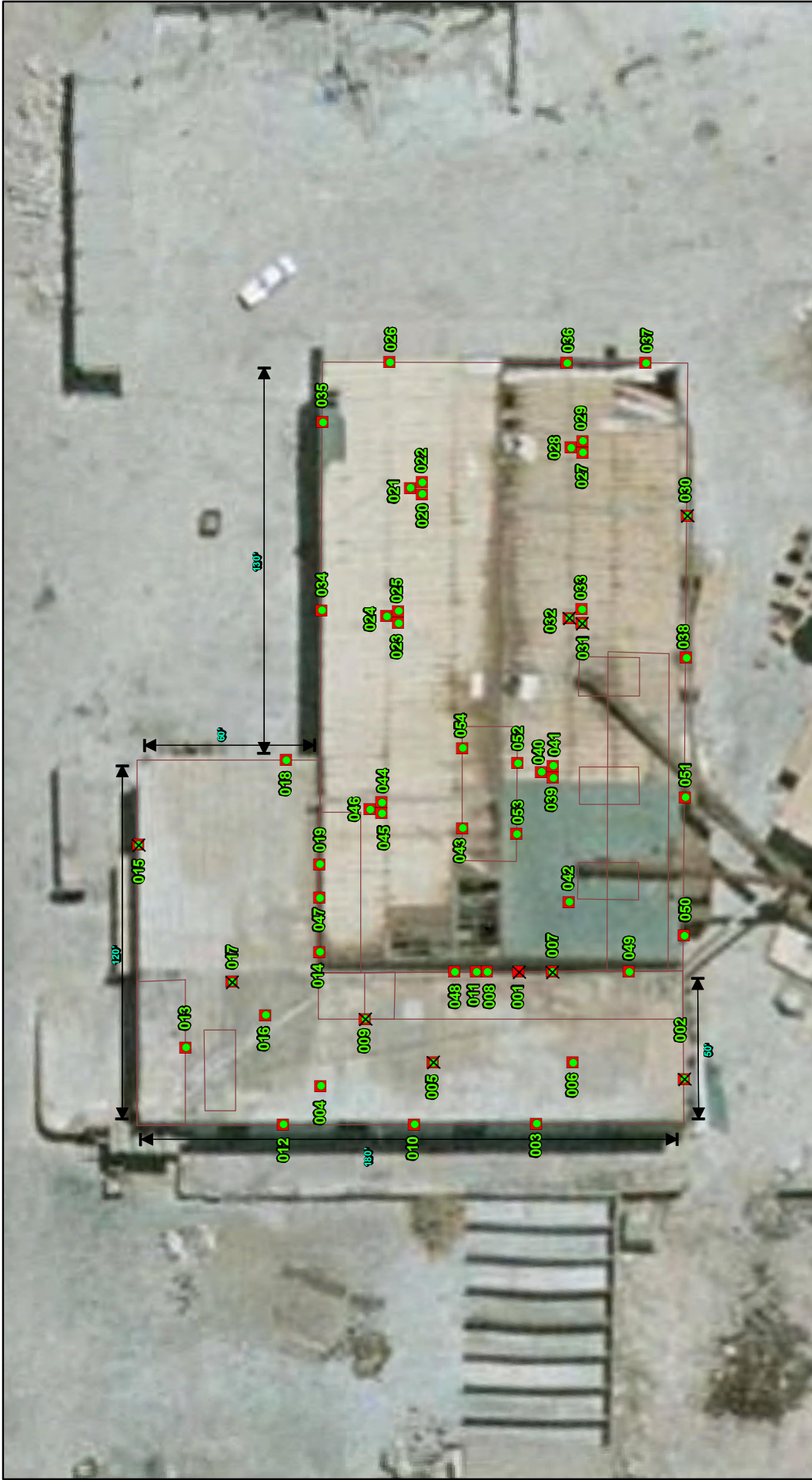
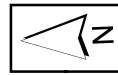


Figure 5
**Smelter Building
Sample Locations**
Halaco Building Assessment
6200 Perkins Road, Oxnard,
Ventura County, California



LEGEND

- SME-D-### = Direct Radiological Surface Measurement
- SME-W-### = Radiological Wipe Sample
- × SME-M-### = Metals Dust Wipe Sample



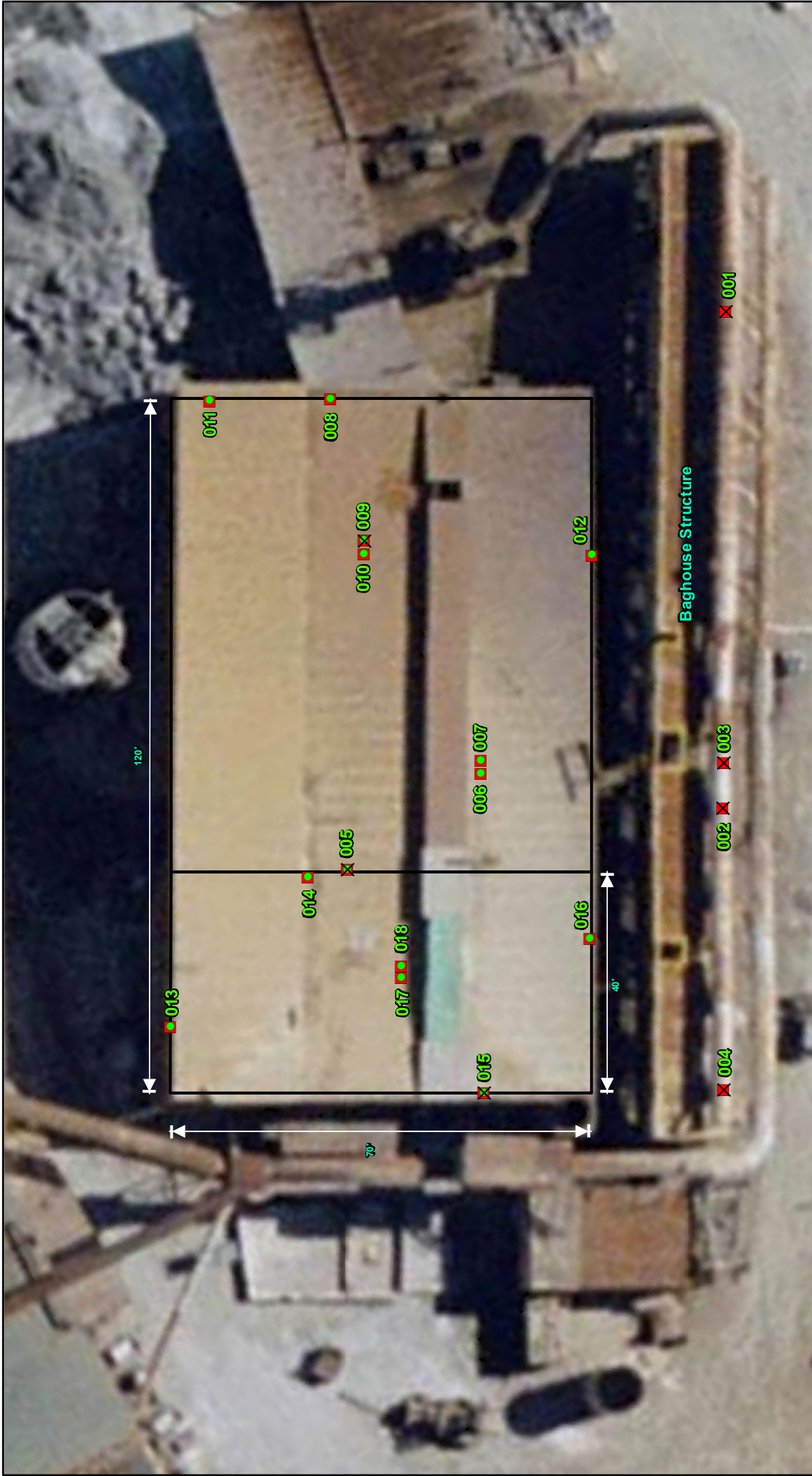


Figure 6
**Baghouse Building
Sample Locations**
Halaco Building Assessment
6200 Perkins Road, Oxnard,
Ventura County, California



LEGEND

- SME-D-### = Direct Radiological Surface Measurement
- SME-W-### = Radiological Wipe Sample
- ✕ SME-M-### = Metals Dust Wipe Sample

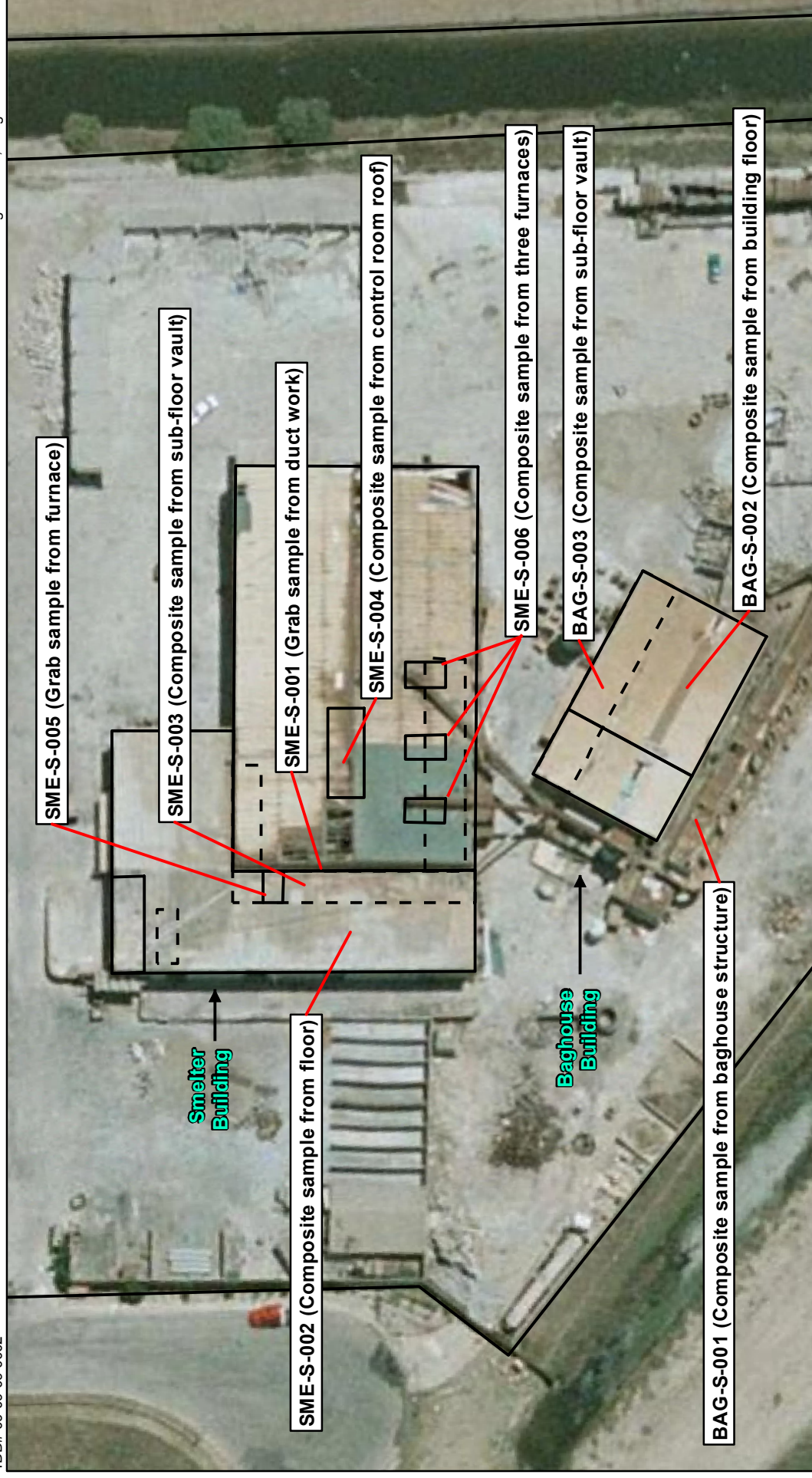
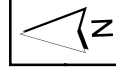


Figure 7

Solid Sample Locations Halaco Building Assessment 6200 Perkins Road, Oxnard, Ventura County, California





**ATTACHMENT B:
PHOTO DOCUMENTATION**



ECOLOGY AND ENVIRONMENT, INC.
Superfund Technical Assessment and Response Team
Halaco Building Assessment, Oxnard, Ventura County, California

E&E Project. No.: 002693.2053.01RA

TDD No: TO2-09-09-09-0002
Contract No. EP-S5-08-01



PHOTO 1

Date: 09/29/2009

Direction: Southeast

Photographer: Dan Haag

Description: View facing southeast of Smelter Building.



PHOTO 2

Date: 09/29/2009

Direction: Southwest

Photographer: Dan Haag

Description: View facing southwest of Baghouse Building.



PHOTO 3

Date: 09/29/2009

Direction: East

Photographer: Dan Haag

Description: View facing east inside Smelter Building.

ECOLOGY AND ENVIRONMENT, INC.
Superfund Technical Assessment and Response Team
Halaco Building Assessment, Oxnard, Ventura County, California

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PHOTO 4

Date: 10/21/2009

Direction: East

Photographer: Dan Haag

Description: U.S. EPA ERRS contractor cutting access ports into baghouse duct work for sample collection.



PHOTO 5

Date: 10/22/2009

Direction: Northwest

Photographer: Dan Haag

Description: U.S. EPA collecting sample inside Smelter Building.

ECOLOGY AND ENVIRONMENT, INC.
Superfund Technical Assessment and Response Team
Halaco Building Assessment, Oxnard, Ventura County, California

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Contract No. EP-S5-08-01



PHOTO 6

Date: 09/29/2009

Direction: South

Photographer: Dan Haag

Description: View of kiln/furnace inside Smelter building.



PHOTO 7

Date: 10/23/2009

Direction: South

Photographer: Dan Haag

Description: View facing south inside Smelter Building. Pink dots indicate sample location.



**ATTACHMENT C:
EMERGENCY RESPONSE AND TIME CRITICAL
QUALITY ASSURANCE SAMPLING PLAN**

**EPA Emergency Response Section (ERS)
And Superfund Technical Assessment and Response Team (START)**

**Emergency Response and Time Critical
Quality Assurance Sampling Plan
For
Soil, Water and Miscellaneous Matrix Sampling**

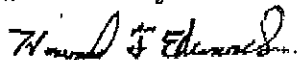
**Response Location: Halaco Engineering Company 6200 Perkins Road, Oxnard, CA
(Site Name and TDD#): Halaco Building Assessment / TDD No.: T02-09-09-0002**

Date: October 16, 2009

Prepared by: Dan Haag



Reviewed by: Howard Edwards



Approved by: Robert Wise / Chris Weden

**This sampling plan was prepared and delivered to the EPA OSC (select one):
Prior to Sampling ☒ Post Sampling (within one month of sampling)**

This emergency sampling plan is intended to be used in conjunction with the EPA's Region 9 Emergency Response Section's Generic Data Quality Objectives (DQOs) for Emergency Responses and Time Critical Evaluations. This sampling plan has been designed to assist field responders in their preparation for collecting, analyzing, shipping, storing and handling samples collected during an emergency response. The use of this generic sampling plan will involve forethought and planning that should help direct the sampling and analytical work. It is meant to be used in the case of emergency responses or time-critical responses when sampling teams may not have the opportunity to write a more thorough sampling plan. Sampling teams should always reference standard quality procedures, standard operations procedures, standard methods for sampling and analytical guidance.

The development of this generic plan will improve the documentation, communication, planning, and overall quality associated with the sampling and analysis by:

- 1) encouraging field teams to consider their goals and objectives before the generation of environmental data,
- 2) documenting predetermined information in a standardize format,
- 3) increasing the communication between sampling personnel and decision makers, and
- 4) detailing expectations and objective before samples are collected.

1.0 Introduction and Background. *Describe the site and specify the geographic boundaries for the site and any specific areas of concern. What is the problem, what precipitated the response, which agencies and other entities (e.g., contractors) are on site, who has taken the lead for the response and for environmental clean-up actions?*

The Halaco Engineering Company (Halaco) is located at 6200 Perkins Road in Oxnard, Ventura County, California. Metal recycling operations were conducted on the property between 1965 and 2004. Scrap metal, including low level radioactive material, was processed at the Halaco facility. The site is divided into two distinct areas: the main processing area and the waste disposal area, which are separated by the Oxnard Industrial Drain (OID). The site is adjacent to the Ormond Beach wetlands, Ormond Beach Lagoon, and Ormond Beach to the west and south. The site is bordered to the east by wetlands owned by the Nature Conservancy and to the north by industrial property.

In 2006-2007, the EPA conducted operations to stabilize and secure the site and limit offsite migration of contaminated wastes including removal of drums and containers of hazardous materials, consolidation of process waste solids, and re-grading of the waste pile located in the waste disposal area. Contamination found at the facility during this operations included aluminum, arsenic, barium, beryllium, cadmium, chromium, copper, magnesium, manganese, nickel, silver, zinc, cesium-137, potassium-40, thorium-228, thorium-230, and thorium-232.

Two dilapidated buildings remain on the main processing area of the Halaco site: a smelter building and a baghouse building. These two buildings are the focus of this investigation.

2.0 Objectives. *Brief statement on the general project objective. What is the overall goal or objective? Specific objectives are summarized in Table D.*

Determine the presence/absence of radioactive surface contamination (total, fixed, and removable) and heavy metal (CAM 17 metals) contamination found throughout the Smelter and Baghouse Buildings located at the Halaco Facility to aid in preparation of building demolition planning.

Collect wipe samples from the Smelter and Baghouse Buildings and analyze for alpha and beta radiation (maximum and removable) and heavy metals (CAM 17).

Collect solid samples from the floors, vaults, and ducting of the Smelter and Baghouse Buildings and analyze for heavy metals (CAM 17) . VOCs, TPH (oil), and radiation.

2.1 Data Use Objectives. (How will the data be used?)

Data that are generated will be used: (Select Appropriate Boxes)

- 1 ☐ To be compared with a background or reference sample(s).
- 2 ☐ To be compared with an available detection or quantification level.
- 3 ☒ To assist in determining the presence or absence of a hazardous material or substance at levels above an available detection or quantification level.
- 4 ☐ To assist with determining the area of impact due to a hazardous material release. (i.e., horizontal and lateral extent).
- 5 ☒ To be compared with site-specific action levels or risk-based action levels (e.g., EPA PRGs) to assist in determination if health threats exist.
- 6 ☐ As definitive confirmatory data for confirmation of non-definitive (screening) data.
- 7 ☐ Other objectives:

2.2 Sampling Objectives. (What are you proposing to do?)

- 1 ☒ Sampling to determine only the presence or absence of a hazardous substance within the area of concern.
- 2 ☒ Sampling to estimate:
 - ☒ contamination levels within the area of concern.
 - ☐ contamination area(s) within a site.
- 3 ☐ Sampling to determine the location of hot spots within the area of concern
- 4 ☐ Surface soil sampling to estimate the lateral extent of contamination
 - ☐ of specific source area(s) or areas of concern
 - ☐ over entire site
- 5 ☐ Sub-surface sampling to estimate the vertical extent of contamination
 - ☐ of specific source area(s) or areas of concern
 - ☐ over entire site.
- 6 ☐ Sampling off site to determine:

2.3 Sample Matrices

- 1 ☒ Surface soils (solid samples collected from buildings' floors, vaults, and ducting)
- 2 ☐ Subsurface soil
Depth(s):

ERS/START

Emergency and Time Critical QASP Soil, Water and Miscellaneous Matrix

- 3 ☐ Surface water
- 4 ☐ Groundwater
Depth(s):
- 5 ☐ Other aqueous matrices
Please specify:
- 6 ☒ Wipe samples
- 7 ☐ Biota
Please specify:
- 8 ☒ Other matrices: Radiological static and scanning surface measurements.

Please note: Please use other QASPs for air and containerized samples.

2.4 Data Type

In general, data type and data needs should be decided prior to data generation. The data can be generally divided into three categories: definitive methodology data (generally data generated using standardize methods), non-definitive methodology data (also referred to as screening data) and screening data with at least 10% definitive conformation. The generation of definitive data is preferable, however in emergency and time critical situations where definitive data is not available, non-definitive data should be generated. Note that the data type is not an indicator of precision, accuracy or documentation completeness, or quality! Reported data should be verified (by a party other than the laboratory) as meeting specific quality control and data category requirements by following a verification or validation procedure. Refer to the START or ERS Quality Assurance Plans for specific quality parameters and requirements.

Check appropriate box(es):

- 1 ☒ Screening data will be generated. The data by itself may not be verifiable. **Due to the time critical situation, the data must be reported and may be used to make decisions. (Radiation Data)**
- 2a ☒ Screening data with at least 10 percent definitive data will be generated. Data using non-definitive analytical methodologies will be generated. **Due to the time critical situation, the data must be reported and may be used to make decisions prior to generation of definitive data.** The screening data by itself may not be verifiable. Screening data will be evaluated and reported with definitive data at a later time. **(Metals, VOCs, and TPH Data)**

2.5 Contaminants of Concern

Potential contaminants of potential concern (COPC), proposed analytical method, proposed action levels and available reporting limit are summarized in Table A.

Table A Contaminants of Concern						
Potential COC	Proposed Analytical Method	Proposed Action Level			Available Reporting Limit	
CAM 17 Metal (Wipe and Solid Samples)	EPA 6010B	Wipe (ug/filter)	Solid (TTLC) (mg/kg)	Solid (iRSL) (mg/kg)	Wipe (ug/filter)	Solid (mg/kg)
<i>Antimony</i>	<i>EPA 6010B</i>	<i>0.5</i>	<i>500</i>	<i>410</i>	<i>0.5</i>	<i>1</i>
<i>Arsenic</i>	<i>EPA 6010B</i>	<i>1.5</i>	<i>500</i>	<i>1.6</i>	<i>1.5</i>	<i>3</i>
<i>Barium</i>	<i>EPA 6010B</i>	<i>0.25</i>	<i>10,000</i>	<i>190,000</i>	<i>0.25</i>	<i>0.5</i>
<i>Beryllium</i>	<i>EPA 6010B</i>	<i>0.25</i>	<i>75</i>	<i>2,000</i>	<i>0.25</i>	<i>0.5</i>
<i>Cadmium</i>	<i>EPA 6010B</i>	<i>0.25</i>	<i>100</i>	<i>800</i>	<i>0.25</i>	<i>0.5</i>
<i>Chromium</i>	<i>EPA 6010B</i>	<i>0.25</i>	<i>2,500</i>	<i>1,400</i>	<i>0.25</i>	<i>0.5</i>
<i>Cobalt</i>	<i>EPA 6010B</i>	<i>0.25</i>	<i>8,000</i>	<i>300</i>	<i>0.25</i>	<i>0.5</i>
<i>Copper</i>	<i>EPA 6010B</i>	<i>0.5</i>	<i>2,500</i>	<i>41,000</i>	<i>0.5</i>	<i>1</i>
<i>Lead</i>	<i>EPA 6010B</i>	<i>0.5</i>	<i>1,000</i>	<i>800</i>	<i>0.5</i>	<i>1</i>
<i>Molybdenum</i>	<i>EPA 6010B</i>	<i>0.5</i>	<i>3,500</i>	<i>5,100</i>	<i>0.5</i>	<i>1</i>
<i>Nickel</i>	<i>EPA 6010B</i>	<i>0.25</i>	<i>2,000</i>	<i>20,000</i>	<i>0.25</i>	<i>0.5</i>
<i>Selenium</i>	<i>EPA 6010B</i>	<i>1.5</i>	<i>100</i>	<i>5,100</i>	<i>1.5</i>	<i>3</i>
<i>Silver</i>	<i>EPA 6010B</i>	<i>0.25</i>	<i>500</i>	<i>5,100</i>	<i>0.25</i>	<i>0.5</i>
<i>Thallium</i>	<i>EPA 6010B</i>	<i>1</i>	<i>700</i>	<i>66</i>	<i>1</i>	<i>2</i>
<i>Vanadium</i>	<i>EPA 6010B</i>	<i>0.25</i>	<i>2,400</i>	<i>5,200</i>	<i>0.25</i>	<i>0.5</i>
<i>Zinc</i>	<i>EPA 6010B</i>	<i>0.5</i>	<i>5,000</i>	<i>310,000</i>	<i>0.5</i>	<i>1</i>
TPH (Solid Samples)	EPA 8015M				6.66 mg/kg	
VOCs (Solid Samples)	EPA 8260B	iRSLs (mg/kg)			mg/kg	
<i>1,1,1-Trichloroethane</i>	<i>EPA 8260B</i>	<i>39,000</i>			<i>0.001</i>	
<i>1,1,2,2-Tetrachloroethane</i>	<i>EPA 8260B</i>	<i>2.9</i>			<i>0.001</i>	
<i>1,1,2-Trichloroethane</i>	<i>EPA 8260B</i>	<i>5.5</i>			<i>0.001</i>	
<i>1,1,-Dichloroethane</i>	<i>EPA 8260B</i>	<i>17</i>			<i>0.001</i>	
<i>1,1,-Dichloroethylene</i>	<i>EPA 8260B</i>	<i>1,100</i>			<i>0.001</i>	
<i>1,2-Dichloromethane</i>	<i>EPA 8260B</i>	<i>na</i>			<i>0.001</i>	
<i>1,2-Dichloropropane</i>	<i>EPA 8260B</i>	<i>4.7</i>			<i>0.001</i>	
<i>2-Butanone</i>	<i>EPA 8260B</i>	<i>190,000</i>			<i>0.005</i>	

Table A (continued) Contaminants of Concern			
Potential COC	Proposed Analytical Method	Proposed Action Level	Available Reporting Limit
<i>2-Hexanone</i>	<i>EPA 8260B</i>	<i>na</i>	<i>0.005</i>
<i>4-Methyl-2-pentanone</i>	<i>EPA 8260B</i>	<i>52,000</i>	<i>0.005</i>
<i>Acetone</i>	<i>EPA 8260B</i>	<i>610,000</i>	<i>0.005</i>
<i>Benzene</i>	<i>EPA 8260B</i>	<i>5.6</i>	<i>0.001</i>
<i>Bromdichloromethane</i>	<i>EPA 8260B</i>	<i>1.4</i>	<i>0.001</i>
<i>Bromodichloroform</i>	<i>EPA 8260B</i>	<i>na</i>	<i>0.001</i>
<i>Bromoform</i>	<i>EPA 8260B</i>	<i>220</i>	<i>0.005</i>
<i>Bromomethane</i>	<i>EPA 8260B</i>	<i>35</i>	<i>0.001</i>
<i>Carbon disulfide</i>	<i>EPA 8260B</i>	<i>3,000</i>	<i>0.005</i>
<i>Carbon tetrachloride</i>	<i>EPA 8260B</i>	<i>1.3</i>	<i>0.001</i>
<i>Chlorobenzene</i>	<i>EPA 8260B</i>	<i>1,500</i>	<i>0.001</i>
<i>Chloroethane</i>	<i>EPA 8260B</i>	<i>na</i>	<i>0.001</i>
<i>Chloroform</i>	<i>EPA 8260B</i>	<i>1.5</i>	<i>0.001</i>
<i>Chloromethane</i>	<i>EPA 8260B</i>	<i>510</i>	<i>0.001</i>
<i>cis-1,2-Dichloroethylene</i>	<i>EPA 8260B</i>	<i>10,000</i>	<i>0.001</i>
<i>cis-1,3-Dichloropropylene</i>	<i>EPA 8260B</i>	<i>na</i>	<i>0.001</i>
<i>Dibromochloromethane</i>	<i>EPA 8260B</i>	<i>3.4</i>	<i>0.001</i>
<i>Ethylbenzene</i>	<i>EPA 8260B</i>	<i>29</i>	<i>0.001</i>
<i>Methylene chloride</i>	<i>EPA 8260B</i>	<i>54</i>	<i>0.005</i>
<i>Styrene</i>	<i>EPA 8260B</i>	<i>38,000</i>	<i>0.001</i>
<i>tert-Butyl methyl ether</i>	<i>EPA 8260B</i>	<i>190</i>	<i>0.001</i>
<i>Tetrachloroethylene</i>	<i>EPA 8260B</i>	<i>2.7</i>	<i>0.001</i>
<i>Toluene</i>	<i>EPA 8260B</i>	<i>46,000</i>	<i>0.001</i>
<i>trans-1,2-Dichloroethylene</i>	<i>EPA 8260B</i>	<i>500</i>	<i>0.001</i>
<i>trans-1,2-Dichloropropylene</i>	<i>EPA 8260B</i>	<i>na</i>	<i>0.001</i>
<i>Trichloroethylene</i>	<i>EPA 8260B</i>	<i>14</i>	<i>0.001</i>
<i>Vinyl acetate</i>	<i>EPA 8260B</i>	<i>4,200</i>	<i>0.005</i>
<i>Vinyl chloride</i>	<i>EPA 8260B</i>	<i>1.7</i>	<i>0.001</i>
<i>Xylenes (total)</i>	<i>EPA 8260B</i>	<i>2,600</i>	<i>0.001</i>
Thorium-228	HASL-300		1 pCi/g
Thorium-230	HASL-300		1 pCi/g
Thorium-232	HASL-300		1 pCi/g
Cesium-137	HASL-300		0.1 pCi/g

Table A (continued) Contaminants of Concern			
Potential COC	Proposed Analytical Method	Proposed Action Level	Available Reporting Limit
Potassium-40	HASL-300		
Thorium-228, Thorium -230	Ludlum direct read instruments and Model 3030 alpha/beta counter	Average ^(a) : 100 dpm /100 cm ² Maximum ^(b) : 300 dpm /100 cm ² Removable: 20 dpm / 100 cm ²	
Thorium-232	Ludlum direct read instruments and Model 3030 alpha/beta counter	Average ^(a) : 1,000 dpm /100 cm ² Maximum ^(b) : 3,000 dpm / 100 cm ² Removable: 200 dpm / 100 cm ²	
Beta-gamma radiation emitting radionuclides (total, fixed, removable), including cesium-137 and potassium-40	Ludlum direct read instruments and Model 3030 alpha/beta counter	Average ^(a) : 5,000 dpm /100 cm ² Maximum ^(b) : 15,000 dpm / 100 cm ² Removable: 1,000 dpm / 100 cm ²	
Other Data Collection Activity (non chemical) (<i>bold all that apply</i>)	GPS	Visual	Interviews
	Other Geophysical	Modeling	Photography
			Magnetometer
			File Search

(a): Measurements of average contaminant should not be averaged over more than 1 square meter.

(b) The maximum contamination level applies to an area of not more than 100 cm².

3.0 Approach and Sampling Methodologies

3.1 Sampling Approach

Indicate sampling approaches to be used (select approach)

ERS/START**Emergency and Time Critical QASP
Soil, Water and Miscellaneous Matrix**

- 1 ☐ Due to the lack of site information the approach will be determined in the field based on professional judgment of START.
- 2 ☐ Due to the lack of site information the approach will be determined in the field based on professional judgment of US EPA.
- 3 ☐ Due to the lack of site information the approach will be determined in the field based on professional judgment of local regulator.
- 4 ☒ Judgmental (Biased) (for solid and wipe samples to be analyzed for metals)
- 5 ☐ Random
- 6 ☐ Systematic
- 7 ☐ Transects
- 8 ☐ Search-Grid (for radiological wipe sampling)

If a search-grid, specify grid type (circle one): Square Triangle Rectangle

Size of contamination hot-spot to be detected:

Shape of hot-spot (circle one): Circle Elliptical Elongated-Elliptical

Required Grid Spacing:

Acceptable probability of missing hot-spot (circle one): 5 % 10 % 20% 40%

3.2 Field Analysis Equipment

Field analysis equipment requirements are summarized in Table B1.

Table B1 Field Analytical Equipment					
Analysis Equipment	Specify the field analytical procedures to be used. Select the appropriate boxes.	Model	Analyses	Matrix	Resource/Contractor
<input type="checkbox"/>	X-Ray Fluorescence (XRF) Device [for metals]				
<input type="checkbox"/>	Lumex (XRF) Mercury Instrument				
<input type="checkbox"/>	Oil Analysis Kit [for oils]				
<input type="checkbox"/>	Immunoassay Test Kits [pesticides, oils, chlorinated substances]				
<input checked="" type="checkbox"/>	Radiation Meter	Ludlum 2241-2 or 2241-3 with Ludlum 43-90 or 43-93	Alpha radiation	Direct surface measurement	EPA-owned
<input checked="" type="checkbox"/>	Radiation Meter	Ludlum 2241-2 or 2241-3 with Ludlum 44-116 or 43-93	Beta radiation	Direct surface measurement	EPA-owned
<input checked="" type="checkbox"/>	Radiation Meter	Ludlum 3030	Alpha/beta radiation	Wipe	EPA-owned

3.3 Field Sampling Equipment

Field equipment requirements are summarized in Table B2.

Table B2 Field Sampling and Decontamination Equipment				
Analyses and Matrix	Sampling Equipment	Dedicated or Reusable	Decontamination Solution	Resource/ Contractor
Metals Wipe Sample	Ghost Wipes	Dedicated	NA	START
Alpha/Beta Radiation Wipe Sample	Whatman 47 mm Filter Paper	Dedicated	NA	START
Metals, VOCs, TPH (oil), and Alpha and Gamma Spectroscopy Solid Sample	Plastic Sample scoop	Dedicated	NA	START

3.4 Field Methods and Procedures

3.4.1 Sample Locations. Indicate the sampling location name, describe location, and indicate rationale for each sample location chosen.

SME-D-001 – 054 / Biased direct measurements in Smelter Building.

BAG-D-001 – 018 / Biased direct measurements in Baghouse Building.

SME-W-001 – 054 / Biased radiation wipe samples in Smelter Building.

BAG-W-001 – 018 / Biased radiation wipe samples from Baghouse Building.

SME-M-001 – XXX / Biased metal wipe samples in Smelter Building.

BAG-M-001 – XXX / Biased metal wipe samples in Baghouse Building.

SME-S-001 – 006 / Biased solid samples from Smelter Building.

BAG-S-001 – 003 / Biased solid samples from Baghouse Building.

Sketch a map of the site and any areas of concern. Indicate sampling locations or sampling areas in Figure A and included names. Use a scale that is meaningful for the sampling work covered under this plan. Sketch out where the samples will be collected and include sampling location names. Attach a local map to this plan if it is available.

Figure A
Sample Location Map

Biased sample locations TBD.

3.4.2 Sample Labeling and Documentation

Sample Jar Labels

Sample labels will clearly identify the particular sample and should include the following:

1. Site name
2. Time and date samples were taken
3. Sample preservation
4. Analysis requested
5. Sample location and/or identification number

Sample labels will be securely affixed to the sample container.

Chain of Custody Record

A chain of custody record will be maintained from the time the sample is taken to its final deposition. Every transfer of custody must be noted and signed for, and a copy of this record kept by each individual who has signed. When samples (or groups of samples) are not under direct control of the individual responsible for them, they must be stored in a secured container sealed with a custody seal.

The chain of custody record should include (at minimum) the following:

1. Sample identification number
2. Sample information
3. Sample location
4. Sample date and time
5. Names(s) and signature(s) of sampler(s)
6. Signature(s) of any individual(s) with control over samples

Custody Seals

Custody seals demonstrate that a sample container has not been tampered with or opened. The individual in possession of the sample(s) will sign and date the seal, affixing it in such a manner that the container cannot be opened without breaking the seal. The name of this individual, along with a description of the samples= packaging, should be noted in the field book.

All sample documents will be completed legibly in ink. Any corrections or revisions will be made by lining through the incorrect entry and by initialing the error. These include the logbooks, the chain of custody forms, this field QASP and any other tracking forms.

Field Logbook

The field logbook is essentially a descriptive notebook detailing site activities and observations so that an accurate account of field procedures can be reconstructed in the writer's absence. All entries will be dated and signed by the individuals making the entries and will include the following:

1. Site name and project number
2. Names of sampling personnel
3. Dates and times of all entries (military time preferred)
4. Descriptions of all site activities, especially sampling start and ending times. Include site entry and exit times

5. Noteworthy events and discussions
6. Weather conditions
7. Site observations
8. Identification and description of samples and locations
9. Subcontractor information and names of on-site personnel
10. Date and time of sample collections, along with chain of custody information
11. Record of photographs
12. Site sketches
13. Exact times of various activities and occurrences related to sampling
14. Deviations from standard procedures or methods and the rational for the deviations.

3.4.3 Sample Containers and Preservatives

Containers and preservatives are summarized in Table C.

Table C Containers and Preservatives			
Analyses and Matrix	Container Type (per sample)	Preservation Method	Holding Time
Metals (6010B) / Wipe	Poly vial	None	6 months
Metals (6010B) / Solid	4 oz glass jar	None	6 months
VOCs (8260) and TPH (8015M) / Solid	4 oz glass jar	None	6 months
Radiation (HASL 300, 901/1M) / Solid	16 oz glass jar	None	6 months
Alpha/beta radiation / Wipe	Envelope	None	None

3.5 Analytical Methods and Procedures

The analytical methods per sample and sample location are presented in Table D. General field QC considerations and requirements are presented in Table E.

Table D Sample Locations and Data Objective Summary					
Sampling Locations and Identifiers should correspond to location indicated on Figure A					
Sample Location(s) (should match with 3.3.1 and Figure A)	Sample Identifiers	Analytical Method Refer to Table A	Data Use Objective(s) Refer to Section 2.1	Data Category Refer to Section 2.4	Samples Matrix
Smelter Building	SME-D-XXX	Radiological surface contamination (total, fixed, removable)	2.1.3	2.4.1	Direct surface measurement
Smelter Building	SME-W-XXX	Radiological surface contamination (total, fixed, removable)	2.1.3	2.4.1	Wipe
Smelter Building	SME-M-XXX	EPA 6010B	2.1.3	2.4.2a	Wipe
Smelter Building	SME-S-XXX	EPA 6010B, EPA 8260, EPA 8015M, HASL 300, EPA 901.1M	2.1.3	2.4.2a	Solid
Baghouse Building	BAG-D-XXX	Radiological surface contamination (total, fixed, removable)	2.1.3	2.4.1	Direct surface measurement
Baghouse Building	BAG-W-XXX	Radiological surface contamination (total, fixed, removable)	2.1.3	2.4.1	Wipe
Baghouse Building	BAG-M-XXX	EPA 6010B	2.1.3	2.4.2a	Wipe
Baghouse Building	BAG-S-XXX	EPA 6010B, EPA 8260, EPA 8015M, HASL 300, EPA 901.1M	2.1.3	2.4.2a	Solid

3.6 Quality Assurance and Quality Control

General field QA/QC considerations and requirements are presented in Table E.

Table E Quality Control Samples and Data Quality Indicator Goals			
QC Sample	Number/Frequency	Data Quality Indicator Goals & Evaluation Criteria	Comments/Exceptions <i>Site specific remarks:</i>
FIELD SPECIFIED QA/QC			
Background or reference sample	At least one sample should be collected from an area believed to be unaffected by source contamination.	Source samples should be at least 3 times background.	Surface soil: up-slope. Surface water: upstream. Ground water: up-gradient. :
Field Blanks	1 per SDG ¹ , per matrix, per method	Source samples should be at least 3 times the blank.	Water only. : Not Required
Travel Blanks	1 per SDG, per matrix, per method	Source samples should be at least 3 times the blank.	Volatile analytes, water only. : Not Required
Equipment Blanks	1 per SDG, per matrix, per method	Source samples should be at least 3 times the blank.	Only when the use of decontaminated non-dedicated equipment is involved. : 1 wipe blank sample collected per day
Field Duplicates or Replicates	1 per SDG, per matrix, per method	Water - 25% RPD ² Soil - 35% RPD ² Other - 35%	As needed by sampling objectives. The procedure for collecting duplicate samples can greatly effect the reproducibility. : 1 co-located (side-by-side field duplicate) sample per every 10 samples collected.
Performance Standards	1 per project, per matrix, per method	75 -125 %R³	If available. : Not Available for this matrix
SELECTED LABORATORY QA/AC			
Method Blank	1 per SDG, per matrix, per method	Std's and samples should be at least 3 times the blank.	Mandatory.
Matrix Spike	1 per SDG, per matrix, per method on field designated sample.	75 -125 %R	Designate sample on COC.
Matrix Spike Duplicate or Replicate	1 per SDG, per matrix, per method on field designated sample.	≤50 RPD for organics; ≤20 RPD for metals	Designate sample on COC.
Reference Standards	1 per SDG, per matrix, per method	75 -125 %R	If available.
Internal Standards	All samples	50 -200 %R	All GC/MS and some GC analyses only.
Laboratory Control Standards	1 per SDG, per matrix, per method	75 - 125 %R	Per method for organic analyses.

¹ SDG = Sample Delivery Group (Maximum 20 samples)

² RPD = Relative Percent Difference

³ %R = Percent Recovery

4.0 Project Organization and Responsibilities

4.1 Schedule of Sampling Activities

Sampling activities are summarized in Table F.

Table F Proposed Schedule of Work For Sampling Activities		
Activity	Start Date	End Date
Sample Collection and Field Screening	10/21/09	10/23/09

4.2 Project Laboratories

Laboratories used for this project are summarized in Table G.

Table G Laboratories	
Lab Name/ Location	Methods
GEL Laboratories, LLC 2040 Savage Road Charleston, SC 29407	EPA 6010B, EPA 8260, EPA 8015M, HASL 300, EPA 901.1M

4.3 Project Personnel and Responsibilities

Personnel and responsibilities are summarized in Table H.

Table H Sample Team(s) Personnel	
Personnel (Agency)	Responsibility
Dan Haag (START)	START Project Manager
Carl Palladino (TPC)	Radiological SME / Sample Collector
Robert Wise (EPA)	FOSC / Sample Collector
Chris Weden (EPA)	FOSC / Sample Collector
Mindy Song (START)	Data Validation
Howard Edwards (START)	START QA

4.4 Modification or Additions to the Generic Data Quality Objective for Emergency and Time Critical Sampling

Project specific modification to the generic DQO statements for this are summarized in Table I. Also indicate which DQO step corresponds to the addition or modification.

Table I DQO Modifications and Additions	
Additions or Modifications to the Generic DQO Output Statements	DQO Step
No significant additions or modifications.	



CHIP, WIPE, AND SWEEP SAMPLING

SOP#: 2011
DATE: 11/16/94
REV. #: 0.0

1.0 SCOPE AND APPLICATION

This standard operating procedure (SOP) outlines the recommended protocol and equipment for collection of representative chip, wipe, and sweep samples to monitor potential surficial contamination.

This method of sampling is appropriate for surfaces contaminated with non-volatile species of analytes (i.e., PCB, PCDD, PCDF, metals, cyanide, etc.) Detection limits are analyte specific. Sample size should be determined based upon the detection limit desired and the amount of sample requested by the analytical laboratory. Typical sample area is one square foot. However, based upon sampling location, the sample size may need modification due to area configuration.

These are standard (i.e., typically applicable) operating procedures which may be varied or changed as required, dependent on site conditions, equipment limitations or limitations imposed by the procedure or other procedure limitations. In all instances, the ultimate procedures employed should be documented and associated with the final report.

Mention of trade names or commercial products does not constitute U.S. EPA endorsement or recommendation for use.

2.0 METHOD SUMMARY

Since surface situations vary widely, no universal sampling method can be recommended. Rather, the method and implements used must be tailored to suit a specific sampling site. The sampling location should be selected based upon the potential for contamination as a result of manufacturing processes or personnel practices.

Chip sampling is appropriate for porous surfaces and is generally accomplished with either a hammer and chisel, or an electric hammer. The sampling device should be laboratory cleaned and wrapped in clean, autoclaved aluminum foil until ready for use. To

collect the sample, a measured and marked off area is chipped both horizontally and vertically to an even depth of 1/8 inch. The sample is then transferred to the proper sample container.

Wipe samples are collected from smooth surfaces to indicate surficial contamination; a sample location is measured and marked off. While wearing a new pair of surgical gloves, a sterile gauze pad is opened, and soaked with solvent. The solvent used is dependent on the surface being sampled. This pad is then stroked firmly over the sample surface, first vertically, then horizontally, to ensure complete coverage. The pad is then transferred to the sample container.

Sweep sampling is an effective method for the collection of dust or residue on porous or non-porous surfaces. To collect such a sample, an appropriate area is measured off. Then, while wearing a new pair of disposable surgical gloves, a dedicated brush is used to sweep material into a dedicated dust pan. The sample is then transferred to the proper sample container.

Samples collected by all three methods are then sent to the laboratory for analysis.

3.0 SAMPLE PRESERVATION, CONTAINERS, HANDLING, AND STORAGE

Samples should be stored out of direct sunlight to reduce photodegradation, cooled to 4°C and shipped to the laboratory performing the analysis. Appropriately sized laboratory cleaned, glass sample jars should be used for sample collection. The amount of sample required will be determined in concert with the analytical laboratory.

4.0 INTERFERENCES AND POTENTIAL PROBLEMS

This method has few significant interferences or problems. Typical problems result from rough porous

surfaces which may be difficult to wipe, chip, or sweep.

5.0 EQUIPMENT

Equipment required for performing chip, wipe, or sweep sampling is as follows:

- C Lab clean sample containers of proper size and composition
- C Site logbook
- C Sample analysis request forms
- C Chain of Custody records
- C Custody seals
- C Field data sheets
- C Sample labels
- C Disposable surgical gloves
- C Sterile wrapped gauze pad (3 in. x 3 in.)
- C Appropriate pesticide (HPLC) grade solvent
- C Medium sized laboratory cleaned paint brush
- C Medium sized laboratory cleaned chisel
- C Autoclaved aluminum foil
- C Camera
- C Hexane (pesticide/HPLC grade)
- C Iso-octane
- C Distilled/deionized water

6.0 REAGENTS

Reagents are not required for preservation of chip, wipe or sweep samples. However, reagents will be utilized for decontamination of sampling equipment.

7.0 PROCEDURES

7.1 Preparation

1. Determine the extent of the sampling effort, the sampling methods to be employed, and the types and amounts of equipment and supplies needed.
2. Obtain necessary sampling and monitoring equipment.
3. Decontaminate or preclean equipment, and ensure that it is in working order.
4. Prepare scheduling and coordinate with staff, clients, and regulatory agency, if appropriate.
5. Perform a general site survey prior to site entry in accordance with the site specific

Health and Safety Plan.

6. Mark all sampling locations. If required the proposed locations may be adjusted based on site access, property boundaries, and surface obstructions.

7.2 Chip Sample Collection

Sampling of porous surfaces is generally accomplished by using a chisel and hammer or electric hammer. The sampling device should be laboratory cleaned or field decontaminated as per the Sampling Equipment Decontamination SOP. It is then wrapped in cleaned, autoclaved aluminum foil. The sampler should remain in this wrapping until it is needed. Each sampling device should be used for only one sample.

1. Choose appropriate sampling points; measure off the designated area. Photo documentation is optional.
2. Record surface area to be chipped.
3. Don a new pair of disposable surgical gloves.
4. Open a laboratory-cleaned chisel or equivalent sampling device.
5. Chip the sample area horizontally, then vertically to an even depth of approximately 1/8 inch.
6. Place the sample in an appropriately prepared sample container with a Teflon lined cap.
7. Cap the sample container, attach the label and custody seal, and place in a plastic bag. Record all pertinent data in the site logbook and on field data sheets. Complete the sampling analysis request form and chain of custody record before taking the next sample.
8. Store samples out of direct sunlight and cool to 4EC.
9. Follow proper decontamination procedures then deliver sample(s) to the laboratory for analysis.

7.3 Wipe Sample Collection

Wipe sampling is accomplished by using a sterile

gauze pad, adding a solvent in which the contaminant is most soluble, then wiping a pre-determined, pre-measured area. The sample is packaged in an amber jar to prevent photodegradation and packed in coolers for shipment to the lab. Each gauze pad is used for only one wipe sample.

1. Choose appropriate sampling points; measure off the designated area. Photo documentation is optional.
2. Record surface area to be wiped.
3. Don a new pair of disposable surgical gloves.
4. Open new sterile package of gauze pad.
5. Soak the pad with solvent of choice.
6. Wipe the marked surface area using firm strokes. Wipe vertically, then horizontally to insure complete surface coverage.
7. Place the gauze pad in an appropriately prepared sample container with a Teflon-lined cap.
8. Cap the sample container, attach the label and custody seal, and place in a plastic bag. Record all pertinent data in the site logbook and on field data sheets. Complete the sampling analysis request form and chain of custody record before taking the next sample.
9. Store samples out of direct sunlight and cool to 4°C.
10. Follow proper decontamination procedures, then deliver sample(s) to the laboratory for analysis.

7.4 Sweep Sample Collection

Sweep sampling is appropriate for bulk contamination. This procedure utilizes a dedicated, hand held sweeper brush to acquire a sample from a pre-measured area.

1. Choose appropriate sampling points; measure off the designated area. Photo documentation is optional.
2. Record the surface area to be swept.

3. Don new pair of disposable surgical gloves.
4. Sweep the measured area using a dedicated brush; collect the sample in a dedicated dust pan.
5. Transfer sample from dust pan to sample container.
6. Cap the sample container, attach the label and custody seal, and place in a plastic bag. Record all pertinent data in the site log book and on field data sheets. Complete the sampling analysis request form and chain of custody record before taking the next sample.
7. Store samples out of direct sunlight and cool to 4EC.
8. Leave contaminated sampling device in the sample material, unless decontamination is practical.
9. Follow proper decontamination procedures, then deliver sample(s) to the laboratory for analysis.

8.0 CALCULATIONS

Results are usually provided in mg/g, µg/g, mass per unit area, or other appropriate measurement. Calculations are typically done by the laboratory.

9.0 QUALITY ASSURANCE/ QUALITY CONTROL

The following general quality assurance procedures apply:

1. All data must be documented on standard chain of custody forms, field data sheets or within the site logbook.
2. All instrumentation must be operated in accordance with operating instructions as supplied by the manufacturer, unless otherwise specified in the work plan. Equipment checkout and calibration activities must occur prior to sampling/operation, and they must be documented.

The following specific quality assurance activities apply to wipe samples:

For wipe samples, a blank should be collected for each sampling event. This consists of a sterile gauze pad, wet with the appropriate solvent, and placed in a prepared sample container. The blank will help identify potential introduction of contaminants via the sampling methods, the pad, solvent or sample container. Spiked wipe samples can also be collected to better assess the data being generated. These are prepared by spiking a piece of foil of known area with a standard of the analyte of choice. The solvent containing the standard is allowed to evaporate, and the foil is wiped in a manner identical to the other wipe samples.

Specific quality assurance activities for chip and sweep samples should be determined on a site specific basis.

10.0 DATA VALIDATION

A review of the quality control samples will be conducted and the data utilized to qualify the environmental results.

11.0 HEALTH AND SAFETY

When working with potentially hazardous materials, follow EPA, OSHA and corporate health and safety procedures.

12.0 REFERENCES

U.S. EPA, A Compendium of Superfund Field Operation Methods. EPA/540/5-87/001.

NJDEP Field Sampling Procedures Manual, February, 1988.



**ATTACHMENT D:
TABLES**



Table 1 - Summary of Background Radiation Results
Halaco Building Assessment, Oxnard, California
October 21-23, 2009

E&E Project No.: 002693.2053.01RA

TDD No.: TO2-09-09-09-0002

Instrument ID	Type of Instrument	Type of Radiation	Concrete (cpm)	Wood (cpm)	Cinder Block (cpm)	Metal (cpm)
2R9/2DR9	Ludlum Model 2241-3 with Model 43-90 probe	alpha	4	3	6	4
1A	Ludlum Model 2221 with Model 44-116 probe	beta	415	218	463	228
2B	Ludlum Model 2360 with Model 43-93 probe	alpha	3	0	2	7
		beta	310	144	329	113

Notes:

cpm: counts per minute

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Table 2 - Summary of Static Radiological Measurements (Maximum and Average Surface Contamination)								
Halaco Building Assessment, Oxnard, California								
October 21-23, 2009								
E&E Project No.: 002693.2053.01RA			TDD No.: TO2-09-09-09-0002					
Sample Number	Instrument ID	Sample Location Description	Alpha (cpm)	Alpha (dpm)	Alpha (dpm/100cm ²)	Beta (cpm)	Beta (dpm)	Beta (dpm/100cm ²)
BAG-D-005	2DR9/1A	Wooden Wall (12 feet above the ground)	2	-23	-0.23	213	-64	-0.64
BAG-D-006	2DR9/1A	Metal Rafter	1	-68	-0.68	157	-904	-9.04
BAG-D-007	2DR9/1A	Metal Roof Panel	1	-68	-0.68	187	-522	-5.22
BAG-D-008	2DR9/1A	Cinder Block Wall (19 feet above the ground)	3	-68	-0.68	402	-777	-7.77
BAG-D-009	2DR9/1A	Metal Rafter	2	-45	-0.45	179	-624	-6.24
BAG-D-010	2DR9/1A	Metal Roof Panel	4	0	0.00	194	-433	-4.33
BAG-D-011	2DR9/1A	Wooden Wall (12 feet above the ground)	1	-45	-0.45	237	242	2.42
BAG-D-012	2DR9/1A	Cinder Block Wall (4 feet above the ground)	3	-68	-0.68	408	-701	-7.01
BAG-D-1012	2DR9/1A	Cinder Block Wall (4 feet above the ground)	1	-113	-1.13	374	-1134	-11.34
BAG-D-013	2DR9/1A	Cinder Block Wall (4 feet above the ground)	1	-113	-1.13	433	-382	-3.82
BAG-D-014	2DR9/1A	Metal Wall (4 feet above the ground)	1	-68	-0.68	209	-242	-2.42
BAG-D-015	2DR9/1A	Cinder Block Wall (19 feet above the ground)	0	-136	-1.36	393	-892	-8.92
BAG-D-016	2DR9/1A	Cinder Block Wall (12 feet above the ground)	3	-68	-0.68	370	-1185	-11.85
BAG-D-017	2DR9/1A	Metal Roof Panel	0	-90	-0.90	185	-548	-5.48
BAG-D-018	2DR9/1A	Metal Rafter	3	-23	-0.23	196	-408	-4.08
BAG-D-1018	2DR9/1A	Metal Rafter	1	-68	-0.68	142	-1096	-10.96
SME-D-002	2DR9/1A	Concrete Wall (4 feet above the ground)	6	45	0.45	365	-637	-6.37
SME-D-003	2DR9/1A	Concrete Wall (12 feet above the ground)	4	0	0.00	392	-293	-2.93
SME-D-004	2DR9/1A	Concrete Wall (19 feet above the ground)	8	90	0.90	481	841	8.41
SME-D-005	2DR9/1A	Concrete Roof Panel	3	-23	-0.23	444	369	3.69
SME-D-006	2DR9/1A	Concrete Roof Panel	5	23	0.23	461	586	5.86
SME-D-007	2DR9/1A	Wooden Wall (19 feet above the ground)	1	-45	-0.45	375	2000	20.00
SME-D-008	2DR9/1A	Concrete Wall 12 feet above the ground)	5	23	0.23	402	-166	-1.66
SME-D-009	2DR9/1A	Metal Side of Smelter Furnace	1	-68	-0.68	214	-178	-1.78

Table 2 - Summary of Static Radiological Measurements (Maximum and Average Surface Contamination)									
Halaco Building Assessment, Oxnard, California									
October 21-23, 2009									
E&E Project No.: 002693.2053.01RA			TDD No.: TO2-09-09-09-0002						
Sample Number	Instrument ID	Sample Location Description	Alpha (cpm)	Alpha (dpm)	Alpha (dpm/100cm ²)	Beta (cpm)	Beta (dpm)	Beta (dpm/100cm ²)	
SME-D-010	2DR9/1A	Concrete Wall (4 feet above the ground)	2	-45	-0.45	425	127	1.27	
SME-D-1010	2DR9/1A	Concrete Wall (4 feet above the ground)	4	0	0.00	432	217	2.17	
SME-D-011	2DR9/1A	Metal Wall (6 feet above sub-floor vault bottom)	1	-68	-0.68	245	217	2.17	
SME-D-012	2DR9/1A	Concrete Wall (4 feet above the ground)	2	-45	-0.45	411	-51	-0.51	
SME-D-013	2DR9/1A	Concrete Wall (12 feet above the ground)	3	-23	-0.23	380	-446	-4.46	
SME-D-014	2DR9/1A	Metal Wall (4 feet above the ground)	3	-23	-0.23	187	-522	-5.22	
SME-D-015	2DR9/1A	Concrete Wall (4 feet above the ground)	1	-68	-0.68	372	-548	-5.48	
SME-D-016	2DR9/1A	Concrete Roof Panel	2	-45	-0.45	391	-306	-3.06	
SME-D-017	2DR9/1A	Metal Rafter	5	23	0.23	282	688	6.88	
SME-D-018	2DR9/1A	Concrete Wall (19 feet above the ground)	5	23	0.23	420	64	0.64	
SME-D-019	2DR9/1A	Concrete Wall (12 feet above the ground)	4	0	0.00	390	-318	-3.18	
SME-D-1019	2DR9/1A	Concrete Wall (12 feet above the ground)	1	-68	-0.68	409	-76	-0.76	
SME-D-020	2B	Metal Roof Panel	0	-182	-1.82	136	348	3.48	
SME-D-021	2B	Metal Rafter	1	-156	-1.56	140	409	4.09	
SME-D-022	2B	Metal Rafter	3	-104	-1.04	100	-197	-1.97	
SME-D-023	2B	Metal Roof Panel	1	-156	-1.56	116	45	0.45	
SME-D-024	2B	Metal Rafter	2	-130	-1.30	127	212	2.12	
SME-D-025	2B	Metal Rafter	1	-156	-1.56	161	727	7.27	
SME-D-026	2B	Metal Wall	1	-156	-1.56	143	455	4.55	
SME-D-027	2B	Metal Roof Panel	3	-104	-1.04	132	288	2.88	
SME-D-028	2B	Metal Rafter	2	-130	-1.30	99	-212	-2.12	
SME-D-029	2B	Metal Rafter	2	-130	-1.30	126	197	1.97	
SME-D-030	2B	Wooden Wall (12 feet above the ground)	3	78	0.78	130	-212	-2.12	
SME-D-1030	2B	Wooden Wall (12 feet above the ground)	0	0	0.00	132	-182	-1.82	

Table 2 - Summary of Static Radiological Measurements (Maximum and Average Surface Contamination)								
Halaco Building Assessment, Oxnard, California								
October 21-23, 2009								
E&E Project No.: 002693.2053.01RA			TDD No.: TO2-09-09-09-0002					
Sample Number	Instrument ID	Sample Location Description	Alpha (cpm)	Alpha (dpm)	Alpha (dpm/100cm ²)	Beta (cpm)	Beta (dpm)	Beta (dpm/100cm ²)
SME-D-031	2B	Metal Roof Panel	1	-156	-1.56	131	273	2.73
SME-D-032	2B	Metal Rafter	0	-182	-1.82	116	45	0.45
SME-D-033	2B	Metal Rafter	1	-156	-1.56	112	-15	-0.15
SME-D-034	2B	Metal Wall (4 feet above the ground)	1	-156	-1.56	136	348	3.48
SME-D-035	2B	Cinder Block Wall (5 feet above the ground)	3	26	0.26	279	-758	-7.58
SME-D-036	2B	Cinder Block Wall (5 feet above the ground)	2	0	0.00	308	-318	-3.18
SME-D-037	2B	Metal Wall (4 feet above the ground)	1	-156	-1.56	107	-91	-0.91
SME-D-038	2B	Cinder Block Wall (4 feet above the ground)	5	78	0.78	283	-697	-6.97
SME-D-039	2B	Metal Roof Panel	1	-156	-1.56	116	45	0.45
SME-D-040	2B	Metal Rafter	1	-156	-1.56	121	121	1.21
SME-D-1040	2B	Metal Rafter	0	-182	-1.82	117	61	0.61
SME-D-041	2B	Metal Rafter (very dusty)	1	-156	-1.56	106	-106	-1.06
SME-D-042	2B	Metal Roof to Smelter Furnace	0	0	0.00	99	-682	-6.82
SME-D-043	2B	Wooden Wall (10 feet above the ground)	1	26	0.26	176	485	4.85
SME-D-044	2B	Metal Roof Panel	1	-156	-1.56	141	424	4.24
SME-D-045	2B	Metal Rafter	1	-156	-1.56	136	348	3.48
SME-D-046	2B	Metal Rafter	1	-156	-1.56	189	1152	11.52
SME-D-047	2B	Concrete Wall (12 feet above the ground)	0	-78	-0.78	271	-591	-5.91
SME-D-048	2B	Metal Wall (1 foot above the ground)	2	-130	-1.30	172	894	8.94
SME-D-049	2B	Concrete Wall (5 feet above the ground)	1	-52	-0.52	254	-848	-8.48
SME-D-050	2B	Wooden Wall (9 feet above the ground)	1	26	0.26	130	-212	-2.12
SME-D-1050	2B	Wooden Wall (9 feet above the ground)	2	52	0.52	139	-76	-0.76
SME-D-051	2B	Cinder Block Wall (2 feet above the ground)	0	-52	-0.52	262	-1015	-10.15
SME-D-052	2B	Metal Wall (6 feet above the ground)	1	-156	-1.56	116	45	0.45

Table 2 - Summary of Static Radiological Measurements (Maximum and Average Surface Contamination)								
Halaco Building Assessment, Oxnard, California								
October 21-23, 2009								
E&E Project No.: 002693.2053.01RA			TDD No.: TO2-09-09-09-0002					
Sample Number	Instrument ID	Sample Location Description	Alpha (cpm)	Alpha (dpm)	Alpha (dpm/100cm ²)	Beta (cpm)	Beta (dpm)	Beta (dpm/100cm ²)
SME-D-053	2B	Cinder Block Wall (6 feet above the ground)	2	0	0.00	286	-652	-6.52
SME-D-054	2B	Metal Wall (3 feet above the ground)	0	-182	-1.82	146	500	5.00
Notes:								
cpm: counts per minute								
dpm: disintegrations per minute								
dpm/100 cm ² : disintegrations per minute per 100 square centimeters								
negative dpm and dpm/100 cm ² results are obtained when the sample result is lower than background result								
Instrument 2DR9: Ludlum Model 2241-3 with a Ludlum Model 43-90 alpha scintillator detector								
Instrument 1A: Ludlum Model 2221 with a Ludlum Model 44-116 beta scintillator detector								
Instrument 2B: Ludlum Model 2360 with a Ludlum Model 43-93 alpha and beta scintillator detector								
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Table 3 - Summary of Radiological Wipe Samples (Removable Surface Contamination)
Halaco Building Assessment, Oxnard, California
October 21-23, 2009

E&E Project No.: 002693.2053.01RA

TDD No.: TO2-09-09-09-0002

Sample Number	Sample Location Description	Alpha (dpm)	Alpha (dpm/100cm ²)	Beta (dpm)	Beta (dpm/100cm ²)
BAG-W-001	Metal Duct Work (Baghouse Structure)	0	0	46	-5
BAG-W-002	Metal Duct Work (Baghouse Structure)	0	0	49	11
BAG-W-003	Metal Duct Work (Baghouse Structure)	0	0	58	59
BAG-W-004	Metal Duct Work (Baghouse Structure)	0	0	40	-38
BAG-W-005	Wooden Wall (12 feet above the ground)	0	0	50	16
BAG-W-006	Metal Rafter	0	0	39	-43
BAG-W-007	Metal Roof Panel	0	0	47	0
BAG-W-008	Cinder Block Wall (19 feet above the ground)	0	0	46	-5
BAG-W-009	Metal Rafter	0	0	52	27
BAG-W-010	Metal Roof Panel	0	0	42	-27
BAG-W-011	Wooden Wall (12 feet above the ground)	0	0	52	27
BAG-W-012	Cinder Block Wall (4 feet above the ground)	0	0	36	-59
BAG-W-1012	Cinder Block Wall (4 feet above the ground)	0	0	42	-27
BAG-W-013	Cinder Block Wall (4 feet above the ground)	0	0	50	16
BAG-W-014	Metal Wall (4 feet above the ground)	0	0	48	5
BAG-W-015	Cinder Block Wall (19 feet above the ground)	0	0	46	-5
BAG-W-016	Cinder Block Wall (12 feet above the ground)	0	0	40	-38
BAG-W-017	Metal Roof Panel	0	0	45	-11
BAG-W-018	Metal Rafter	0	0	43	-21
BAG-W-1018	Metal Rafter	0	0	46	-5
SME-W-001	Metal Duct Work	0	0	33	0.33
SME-W-002	Concrete Wall (4 feet above the ground)	0	0	33	0.33
SME-W-003	Concrete Wall (12 feet above the ground)	0	0	38	0.38
SME-W-004	Concrete Wall (19 feet above the ground)	0	0	36	0.36
SME-W-005	Concrete Roof Panel	0	0	36	0.36
SME-W-006	Concrete Roof Panel	0	0	42	0.42
SME-W-007	Wooden Wall (19 feet above the ground)	0	0	33	0.33
SME-W-008	Concrete Wall 12 feet above the ground)	0	0	39	0.39
SME-W-009	Metal Side of Smelter Furnace	0	0	36	0.36
SME-W-010	Concrete Wall (4 feet above the ground)	0	0	37	0.37
SME-W-1010	Concrete Wall (4 feet above the ground)	0	0	41	-32
SME-W-011	Metal Wall (6 feet above sub-floor vault bottom)	0	0	49	11
SME-W-012	Concrete Wall (4 feet above the ground)	0	0	47	0
SME-W-013	Concrete Wall (12 feet above the ground)	0	0	42	-27
SME-W-014	Metal Wall (4 feet above the ground)	0	0	49	11
SME-W-015	Concrete Wall (4 feet above the ground)	0	0	39	-43
SME-W-016	Concrete Roof Panel	0	0	48	5
SME-W-017	Metal Rafter	0	0	51	21

Table 3 - Summary of Radiological Wipe Samples (Removable Surface Contamination)
Halaco Building Assessment, Oxnard, California
October 21-23, 2009

E&E Project No.: 002693.2053.01RA

TDD No.: TO2-09-09-09-0002

Sample Number	Sample Location Description	Alpha (dpm)	Alpha (dpm/100cm ²)	Beta (dpm)	Beta (dpm/100cm ²)
SME-W-018	Concrete Wall (19 feet above the ground)	0	0	50	16
SME-W-019	Concrete Wall (12 feet above the ground)	0	0	51	21
SME-W-1019	Concrete Wall (12 feet above the ground)	1	0.01	51	21
SME-W-020	Metal Roof Panel	0	0	40	0.4
SME-W-021	Metal Rafter	0	0	36	0.36
SME-W-022	Metal Rafter	0	0	56	0.56
SME-W-023	Metal Roof Panel	0	0	6	0.06
SME-W-024	Metal Rafter	0	0	46	0.46
SME-W-025	Metal Rafter	0	0	12	0.12
SME-W-026	Metal Wall	0	0	24	0.24
SME-W-027	Metal Roof Panel	0	0	4	0.04
SME-W-028	Metal Rafter	1	0.01	0	0
SME-W-029	Metal Rafter	0	0	14	0.14
SME-W-030	Wooden Wall (12 feet above the ground)	0	0	44	-16
SME-W-1030	Wooden Wall (12 feet above the ground)	0	0	32	-80
SME-W-031	Metal Roof Panel	0	0	48	5
SME-W-032	Metal Rafter	0	0	45	-11
SME-W-033	Metal Rafter	0	0	53	32
SME-W-034	Metal Wall (4 feet above the ground)	0	0	45	-11
SME-W-035	Cinder Block Wall (5 feet above the ground)	0	0	43	-21
SME-W-036	Cinder Block Wall (5 feet above the ground)	0	0	47	0
SME-W-037	Metal Wall (4 feet above the ground)	0	0	52	27
SME-W-038	Cinder Block Wall (4 feet above the ground)	0	0	49	11
SME-W-039	Metal Roof Panel	0	0	46	-5
SME-W-040	Metal Rafter	0	0	51	21
SME-W-1040	Metal Rafter	0	0	48	5
SME-W-041	Metal Rafter (very dusty)	0	0	51	21
SME-W-042	Metal Roof to Smelter Furnace	0	0	45	-11
SME-W-043	Wooden Wall (10 feet above the ground)	0	0	48	5
SME-W-044	Metal Roof Panel	0	0	61	75
SME-W-045	Metal Rafter	0	0	44	-16
SME-W-046	Metal Rafter	0	0	54	38
SME-W-047	Concrete Wall (12 feet above the ground)	0	0	47	0
SME-W-048	Metal Wall (1 foot above the ground)	0	0	53	32
SME-W-049	Concrete Wall (5 feet above the ground)	0	0	48	5
SME-W-050	Wooden Wall (9 feet above the ground)	0	0	46	-5
SME-W-1050	Wooden Wall (9 feet above the ground)	0	0	48	5
SME-W-051	Cinder Block Wall (2 feet above the ground)	0	0	54	38

Table 3 - Summary of Radiological Wipe Samples (Removable Surface Contamination)
Halaco Building Assessment, Oxnard, California
October 21-23, 2009

E&E Project No.: 002693.2053.01RA

TDD No.: TO2-09-09-09-0002

Sample Number	Sample Location Description	Alpha (dpm)	Alpha (dpm/100cm ²)	Beta (dpm)	Beta (dpm/100cm ²)
SME-W-052	Metal Wall (6 feet above the ground)	0	0	55	43
SME-W-053	Cinder Block Wall (6 feet above the ground)	0	0	54	38
SME-W-054	Metal Wall (3 feet above the ground)	0	0	54	38

Notes:

dpm: disintegrations per minute

dpm/100 cm²: disintegrations per minute per 100 square centimeters

negative dpm/100 cm² results are obtained when the sample result is lower than background result

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Table 5 - Validated Analytical Results - Solid Samples
Halaco Building Assessment, Oxnard, California
October 21-23, 2009

E&E Project No.: 002693.2053.01RA

TDD No.: TO2-09-09-09-0002

Sample ID												
Chemical	SME-S-001	SME-S-002	SME-S-003	SME-S-1003	SME-S-004	SME-S-005	SME-S-006	BAG-S-001	BAG-S-002	BAG-S-003	iRSL	TTLc
Metals by EPA 6010B												
Antimony	ND	6.13	7.56	8.14	31	4.24	18.3	4.8	5.15	6.37	410	500
Arsenic	14.5	21.9	33.7	39.3	10.8	16.3	9.33	29.2	24.4	28.2	1.6	500
Barium	237	856	167	149	2,880	41.1	432	354	923	700	190,000	10,000
Beryllium	4.13	72.5	5.65	6.35	62.9	7.48	6.91	18.8	67.4	33.8	2,000	75
Cadmium	5.55	1.68	1.38	1.63	4.82	ND	4	ND	1.39	3.69	800	100
Chromium	81.3	73	89.4	85.2	174	36.5	203	197	58.3	117	1,400	2,500
Cobalt	20	5.97	6.09	7.52	5.87	15.4	4.63	22.3	5.65	14.3	300	8,000
Copper	201 J	308 J	622 J	244 J	2020 J	120 J	2270 J	364 J	207 J	798 J	41,000	2,500
Lead	44.4	46.5	140	112	139	17.6	152	7.19	42.1	81	800	1,000
Molybdenum	32.5	3.87	13.8	15.3	5.26	ND	6.35	64.1	6.5	17.5	5,100	3,500
Nickel	49.8	46.5	75.1	78.5	77.8	33.5	105	256	41.2	103	20,000	2,000
Selenium	15.6 J	86.2 J	48.8 J	31.6 J	74.5 J	68.2 J	2.07 J	72.2 J	81.3 J	48.9 J	5,100	100
Silver	1.92	4.96	1.57	ND	10.3	2.55	4.92	3.54	4.63	3.44	5,100	500
Thallium	ND	ND	ND	9.89	12	ND	ND	ND	10.1	ND	66	700
Vanadium	10.6	8.92	13.5	15.2	29.6	9.41	34.6	20.6	9.18	19.9	5,200	2,400
Zinc	1070 J	1720 J	5580 J	3610 J	3340 J	481 J	1930 J	698 J	1830 J	4320 J	310,000	5,000
Total Petroleum Hydrocarbons by EPA 8015M												
TPH (disel range organics)	6.17	260	12,500	11,500	N/A	205	10.2	36.7	450	120	na	
Volatile Organic Compounds by EPA 8260												
1,1,1-Trichloroethane	ND	ND	ND	ND	N/A	ND	ND	ND	ND	ND	39,000	
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	N/A	ND	ND	ND	ND	ND	2.9	
1,1,2-Trichloroethane	ND	ND	ND	ND	N/A	ND	ND	ND	ND	ND	5.5	
1,1-Dichloroethane	ND	ND	ND	ND	N/A	ND	ND	ND	ND	ND	17	
1,1-Dichloroethylene	ND	ND	ND	ND	N/A	ND	ND	ND	ND	ND	1100	
1,2-Dichloroethane	ND	ND	ND	ND	N/A	ND	ND	ND	ND	ND	na	
1,2-Dichloropropane	ND	ND	ND	ND	N/A	ND	ND	ND	ND	ND	4.7	
2-Butanone	ND	0.002. J	0.0905 J	0.0475 J	N/A	ND	ND	0.0481	ND	ND	190,000	
2-Hexanone	ND	ND	0.0157 J	0.0103 J	N/A	ND	ND	0.00694	ND	ND	na	
4-Methyl-2-pentanone	ND	ND	0.0211 J	0.0136 J	N/A	ND	ND	ND	ND	ND	52,000	
Acetone	0.00355	0.00416 J	0.0507 J	0.00237 J	N/A	0.00483	0.00501	ND	0.00396	ND	610,000	
Benzene	ND	ND	ND	ND	N/A	ND	ND	ND	ND	ND	5.6	
Bromodichloromethane	ND	ND	ND	ND	N/A	ND	ND	ND	ND	ND	1.4	
Bromoform	ND	ND	ND	ND	N/A	ND	ND	ND	ND	ND	220	
Bromomethane	ND	ND	ND	ND	N/A	ND	ND	ND	ND	ND	35	
Carbon disulfide	ND	ND	ND	0.0112 J	N/A	ND	ND	ND	ND	ND	3,000	
Carbon tetrachloride	ND	ND	ND	ND	N/A	ND	ND	ND	ND	ND	1.3	
Chlorobenzene	ND	ND	ND	ND	N/A	ND	ND	ND	ND	ND	1,500	
Chloroethane	ND	ND	ND	ND	N/A	ND	ND	ND	ND	ND	na	
Chloroform	0.000519	ND	ND	ND	N/A	ND	ND	0.000873	ND	ND	1.5	

Table 5 - Validated Analytical Results - Solid Samples
Halaco Building Assessment, Oxnard, California
October 21-23, 2009

E&E Project No.: 002693.2053.01RA

TDD No.: TO2-09-09-09-0002

Chemical	Sample ID										
	SME-S-001	SME-S-002	SME-S-003	SME-S-1003	SME-S-004	SME-S-005	SME-S-006	BAG-S-001	BAG-S-002	BAG-S-003	
Chloromethane	ND	ND	ND	ND	N/A	ND	0.00301	0.000604	ND	ND	510
Dibromochloromethane	ND	ND	ND	ND	N/A	ND	ND	ND	ND	ND	3.4
Ethylbenzene	ND	ND	ND	ND	N/A	ND	ND	ND	ND	ND	29
Methylene chloride	ND	ND	0.00729 J	0.00626 J	N/A	ND	ND	ND	ND	ND	54
Styrene	ND	ND	0.00368 J	0.00192 J	N/A	ND	ND	ND	ND	ND	38,000
Tetrachloroethylene	ND	ND	ND	ND	N/A	ND	ND	ND	ND	ND	2.7
Toluene	ND	ND	0.000688 J	0.000444 J	N/A	ND	ND	ND	ND	ND	46,000
Trichloroethylene	ND	ND	ND	ND	N/A	ND	ND	ND	ND	ND	14
Vinyl acetate	ND	ND	ND	ND	N/A	ND	ND	ND	ND	ND	4,200
Vinyl chloride	ND	ND	ND	ND	N/A	ND	ND	ND	ND	ND	1.7
Xylenes (total)	ND	ND	0.000502 J	ND	N/A	ND	ND	0.00156	ND	ND	2600
cis-1,2-Dichloroethylene	ND	ND	ND	ND	N/A	ND	ND	ND	ND	ND	10,000
cis-1,3-Dichloropropylene	ND	ND	ND	ND	N/A	ND	ND	ND	ND	ND	na
tert-Butyl methyl ether	ND	ND	ND	ND	N/A	ND	ND	ND	ND	ND	190
trans-1,2-Dichloroethylene	ND	ND	ND	ND	N/A	ND	ND	ND	ND	ND	500
trans-1,3-Dichloropropylene	ND	ND	ND	ND	N/A	ND	ND	ND	ND	ND	na
Alpha Spectroscopy by DOE EML HASL-300, Th-01-RC Modified (pCi/g)											rPRG
Thorium-228	N/A	ND	ND	ND	N/A	ND	ND	ND	ND	1.02	24.2
Thorium-230	N/A	ND	ND	ND	N/A	0.271	0.512	ND UJ	ND	1.45	3.49
Thorium-232	N/A	ND	ND	ND	N/A	ND	0.519	ND	ND	0.677	3.1
Gamma Spectroscopy by DOE HASL-300,4.5.2.3/Ga-01R (pCi/g)											rPRG
Actinium-228	N/A	ND	ND UJ	ND	N/A	ND	ND	ND	ND	0.374	732
Bismuth-214	N/A	ND	0.142	ND	N/A	ND	ND	ND	ND UJ	0.322	8,190
Cesium-137	N/A	ND	ND	ND	N/A	ND	ND	ND	ND	ND	3.88
Lead-212	N/A	0.141	ND	ND	N/A	ND	ND	ND	ND	0.473	3,640
Lead-214	N/A	0.174	ND	ND UJ	N/A	ND	ND	ND	ND	0.357	46,300
Potassium-40	N/A	44.3	11.8	13.6	N/A	32.1	54	6.97	35.5	17.7	0.108
Radium-228	N/A	ND	ND UJ	ND	N/A	ND	ND	ND	ND	0.374	0.26
Thallium-208	N/A	ND	0.057	ND	N/A	ND	ND	ND	ND	0.201	22,600

Notes:

mg/kg: milligrams per kilogram

µg/kg: micrograms per kilogram

pCi/g: picocuries per gram

all results in milligrams per kilogram (mg/kg), unless otherwise specified

iRSL: U.S. EPA Regional Screening Level, Industrial Soil, April 2009

rPRG: U.S. EPA Preliminary Remediation Goals for Radionuclides, Residential Soil, February 2002

TTL: California Total Threshold Limit Concentration

N/A: not analyzed

ND: not detected

J: estimated

UJ: The detection limit may be estimated or uncertain

Bolded text indicates results exceeded iRSL criteria

Red text indicates results exceeded rPRG criteria

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**ATTACHMENT E:
VALIDATED DATA REPORTS**

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
Project Number: 002693.2053.01RA	TDD No: TO2-09-09-09-0002

Laboratory: GEL Laboratories, LLC	Lab Project Number: 239855
Sampling Dates: 10/21/09 & 10/22/09	Sample Matrix: Filter
Analytical Method: METALS (EPA 6010B)	Data Reviewer: M. Song

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song
 Technical QA Reviewer: Howard Edwards
 Project Manager: Dan Haag

Date: 12/7/09
 Date: 12/10/09
 Date: 12/9/09

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	BLK-01	239855-001
2	BLK-02	239855-002
3	SME-M-001	239855-003
4	SME-M-002	239855-004
5	SME-M-005	239855-005
6	SME-M-007	239855-006
7	SME-M-009	239855-007
8	SME-M-015	239855-008
9	SME-M-017	239855-009
10	SME-M-030	239855-010
11	SME-M-031	239855-011
12	SME-M-032	239855-012
13	BAG-M-001	239855-013
14	BAG-M-002	239855-014
15	BAG-M-003	239855-015
16	BAG-M-004	239855-016
17	BAG-M-005	239855-017
18	BAG-M-1005	239855-018
19	BAG-M-009	239855-019
20	BAG-M-015	239855-020
21	BAG-M-1015	239855-021

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
Project Number: 002693.2053.01RA	TDD No: TO2-09-09-09-0002

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- X Included: no problems
- * Included: problems noted in review
- O Not Included and/or Not Available
- NR Not Required
- RS Provided As Re-submission

Case Narrative:

- X Case Narrative present

Quality Control Summary Package:

- X Data Summary sheets
- X Initial and Continuing Calibration results
- X CRDL Standard results
- * Preparation Blank and Calibration Blank results
- X ICP Interference Check Sample results
- NR Matrix Spike recoveries
- NR Matrix Duplicate results
- X Laboratory Control Sample recoveries
- NR Method of Standard Additions results
- X ICP Serial Dilution results
- X Instrument Detection Limits
- X ICP Interelement Correction Factors
- NR ICP Linear Ranges
- X Preparation Log
- X Analysis Run Log

Raw QC Data Package Section

- X Chain-of-Custody Records
- X Instrument Printouts
- X Sample Preparation Notebook Pages
- X Logbook and Worksheet Pages
- NR Percent Solids Determination

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
Project Number: 002693.2053.01RA	TDD No: TO2-09-09-09-0002

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	Holding Times	YES
2	Initial and Continuing Calibrations	YES
3	Laboratory Control Sample	YES
4	Matrix Spike	N/A
5	Blanks and Background Samples	NO
6	Duplicate Analyses	NO
7	Interference Check Samples and Serial Dilution Analysis	YES
8	Post Digestion Spike and Standard Addition Analysis	N/A
9	Analyte Quantitation	YES
10	Overall Assessment of Data	YES
11	Usability of Data	YES

Comments: N/A: Not Applicable.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
Project Number: 002693.2053.01RA	TDD No: TO2-09-09-09-0002

1. HOLDING TIMES

☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:

Mercury: 28 days (from collection) for analysis.

Hexavalent chromium: 24 hours (from collection) for analysis.

All other metals: 180 days (from collection) for analysis.

Comments: All holding times were met.

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 80-120% for mercury and tin, and 90-110% for all other metals. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 65% or above 135% (for mercury and tin) or below 75% or above 125% (for all other metals), all associated data are rejected (R).

Comments: All recoveries of metals in initial and continuing calibration verifications were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
Project Number: 002693.2053.01RA	TDD No: TO2-09-09-09-0002

3. LABORATORY CONTROL SAMPLE

- ☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Percent recoveries of LCS were within the control limits.

4. MATRIX SPIKE

- ☐ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☒ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%.

For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: No sample was designated for matrix spike due to samples being filter matrix but LCS and LCD were analyzed instead.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
Project Number: 002693.2053.01RA	TDD No: TO2-09-09-09-0002

5. BLANKS AND BACKGROUND SAMPLES

☐ Acceptable
☒ Detection Limits Adjusted

The following blanks were analyzed:

☒ Method (preparation) Blanks
☒ Field Blanks
☐ Calibration Blanks
☐ Rinsate Blanks
☐ Background Samples

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the preparation blanks at reporting limit level but trace levels of Cu (2.3 ug /filter) & Zn (111 ug /filter) in BLK-01 and Cu (1.96 ug /filter) & Zn (97.5 ug /filter) in BLK-02 were found. Detected Cu and Zn results were qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

6. DUPLICATE ANALYSES

☐ Acceptable
☒ Acceptable with qualification
☐ Unacceptable
☐ No Duplicates Analyzed

Type of duplicates analyzed:

☒ Field Duplicates
☐ Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
Project Number: 002693.2053.01RA	TDD No: TO2-09-09-09-0002

Analyte (ug/Filter)	BAG-M-005	BAG-M-1005	RPD (%)
Antimony	4.54	9.45	70*
Arsenic	3.88	7.86	68*
Barium	164	221	30*
Beryllium	1.98	3.44	54*
Cadmium	0.527	1.49	95*
Chromium	8.13	16.9	70*
Cobalt	0.676	1.25	60*
Copper	55.7	113	68*
Lead	16.1	33.2	69*
Molybdenum	0.485	0.917	62*
Nickel	6.13	12.7	70*
Selenium	2.07	4.43	73*
Silver	0.218	0.412	62*
Thallium	<0.5	0.544	Not Calculated
Vanadium	2.72	4.88	57*
Zinc	2080	4740	78*

*: RPD>35%

Comments: BAG-M-1005 was a field duplicate of BAG-M-005 and the detected results with a high RPD were qualified as estimated (J).

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
Project Number: 002693.2053.01RA	TDD No: TO2-09-09-09-0002

Analyte (ug/Filter)	BAG-M-015	BAG-M-1015	RPD (%)
Antimony	0.959	0.806	17
Arsenic	3.42	4.09	18
Barium	27.8	37.5	30
Beryllium	0.283	0.249	13
Cadmium	0.133	<0.1	Not Calculated
Chromium	3.29	2.60	23
Cobalt	1.49	0.932	46*
Copper	13.3	9.88	30
Lead	2.34	1.55	41*
Molybdenum	0.445	0.514	14
Nickel	1.26	1.03	20
Selenium	0.521	0.614	16
Silver	<0.1	<0.1	0
Thallium	1.64	1.71	4
Vanadium	0.758	0.701	8
Zinc	131	129	2

*: RPD>35%

Comments: BAG-M-1015 was a field duplicate of BAG-M-015 and all RPDs except Co and Pb were within the control limit. The detected Co and Pb results were qualified as estimated (J).

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
Project Number: 002693.2053.01RA	TDD No: TO2-09-09-09-0002

7. INTERFERENCE CHECK SAMPLES AND SERIAL DILUTION ANALYSIS

- ☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ Not required

Interference Check Samples (ICS) - Unless flagged below, an ICS was analyzed at the beginning and end of each run and at least twice every eight hours. Recoveries were within a range of 80-120%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J) if the concentrations of Al, Ca, Fe, or Mg are higher in the sample than in the ICS.

Serial Dilution Analysis - Unless flagged below, a serial dilution analysis was performed at a rate of one per 20 samples on a sample having analyte concentrations greater than 50 times the IDL. Percent differences were within a range of 0-10%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: ICS recoveries were within the control limit.

Sample SME-M-002 and BAG-M-1015 were used for serial dilution and all QC requirements were met.

8. POST DIGESTION SPIKE AND STANDARD ADDITIONS

- ☐ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☒ Not required

Post-digestion spikes - If a furnace AA result was flagged by the laboratory with an E to indicate interference, and the associated post-digestion spike recovery was less than 10%, the associated results are rejected (R).

Method of Standard Additions - If the method of standard additions was required and the correlation coefficient was less than 0.995, the associated results were qualified as estimated (J).

Comments:

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
Project Number: 002693.2053.01RA	TDD No: TO2-09-09-0002

9. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

$$\text{ug/L} = \frac{(\text{Instrument printout concentration, mg/L})(1000 \text{ ug/mg})(\text{final volume of extract, mL})}{(\text{Initial volume of extract, mL})}$$

Soil samples:

$$\text{mg/kg} = \frac{(\text{Instrument printout concentration, mg/L})(\text{final volume of extract, mL})(0.001 \text{ L/mL})}{(\text{weight of sample extracted, g})(0.001 \text{ kg/g})(\text{fraction solids})}$$

Comments: Analyte quantitation is acceptable.

Sample: SME-M-007

As: (216.59 ug/L) (0.05 L/filter) (2) = 21.659 ug/filter. Lab reported 21.7 ug/ filter.

Cr: (285.05 ug/L) (0.05 L/filter) (2) = 28.505 ug/filter. Lab reported 28.5 ug/ filter.

Cu: (3275.0 ug/L) (0.05 L/filter) (2) = 327.5 ug/filter. Lab reported 328 ug/ filter.

Pb: (176.62 ug/L) (0.05 L/filter) (2) = 17.662 ug/filter. Lab reported 17.7 ug/ filter.

10. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

☐ Acceptable
☒ Acceptable with Qualification
☐ Rejected

Accepted data meet the minimum requirements for the following EPA data category:

☐ ERS Screening
☐ Non-definitive with 10 % Confirmation by Definitive Methodology
☐ Definitive, Comprehensive Statistical Error Determination was performed.
☒ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

Samples SME-M-030, SME-M-032, BAG-M-005, and BAG-M-1005 reacted severely to the acid / heat during the prep procedure and it created a foam-like matrix that breached the sample vessel. The samples were analyzed as is. The reported values of these samples are to be considered biased low due to samples loss during the prep procedure.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
Project Number: 002693.2053.01RA	TDD No: TO2-09-09-09-0002

11. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the EPA EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM QUALITY ASSURANCE SAMPLING PLAN FOR SOIL, WATER AND MISCELLANEOUS MATRIX SAMPLING, HALACO BUILDING ASSESSMENT, OXNARD, VENTURA COUNTY, CALIFORNIA, OCTOBER 16, 2009 (QASP).

The following data use objective was indicated in the QASP:

TO ASSIST IN DETERMINING THE PRESENCE OR ABSENCE OF A HAZARDOUS MATERIAL OR SUBSTANCE AT LEVELS ABOVE AN AVAILABLE DETECTION OR QUANTIFICATION LEVEL.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVE.

B. These data meet quality objectives stated in the QASP.

AS INDICATED IN SECTION 2.4 OF THE QASP, THE INVESTIGATION WILL GENERATE BOTH SCREENING AND DEFINITIVE DATA AND TABLE E OF THE QASP OUTLINES THE DATA QUALITY INDICATOR GOALS APPLICABLE TO THE DEFINITIVE DATA QUALITY LEVEL. THE DATA IN THIS PACKAGE MEET THESE REQUIREMENTS.

12. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 239855

METHOD TYPE: SW846

SAMPLE ID: 239855001

CLIENT ID: BLK-01

CONTRACT: ECOL00209

MATRIX: F

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS:

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M</u>	<u>MDL</u>	<u>DF</u>	<u>Instrument ID</u>	<u>Analytical Run</u>
7440-36-0	Antimony	0.33	ug/Filter	U		P	0.33	2	OPTIMA1	111109-2
7440-38-2	Arsenic	0.5	ug/Filter	U		P	0.5	2	OPTIMA1	111109-2
7440-39-3	Barium	0.166	ug/Filter	B		P	0.1	2	OPTIMA1	111109-2
7440-41-7	Beryllium	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2
7440-43-9	Cadmium	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2
7440-47-3	Chromium	0.15	ug/Filter	U		P	0.15	2	OPTIMA1	111109-2
7440-48-4	Cobalt	0.2	ug/Filter	U		P	0.2	2	OPTIMA1	111109-2
7440-50-8	Copper	2.3	ug/Filter			P	0.3	2	OPTIMA1	111109-2
7439-92-1	Lead	0.25	ug/Filter	U		P	0.25	2	OPTIMA1	111109-2
7439-98-7	Molybdenum	0.26	ug/Filter	B		P	0.2	2	OPTIMA1	111109-2
7440-02-0	Nickel	0.15	ug/Filter	U		P	0.15	2	OPTIMA1	111109-2
7782-49-2	Selenium	1.93	ug/Filter	B		P	0.5	2	OPTIMA1	111109-2
7440-22-4	Silver	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2
7440-28-0	Thallium	0.5	ug/Filter	U		P	0.5	2	OPTIMA1	111109-2
7440-62-2	Vanadium	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2
7440-66-6	Zinc	111	ug/Filter			P	0.33	2	OPTIMA1	111109-2

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METALS
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INORGANICS ANALYSIS DATA PACKAGE

SDG No: 239855

METHOD TYPE: SW846

SAMPLE ID: 239855002

CLIENT ID: BLK-02


CONTRACT: ECOL00209

MATRIX:F

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS:

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M</u>	<u>MDL</u>	<u>DF</u>	<u>Instrument ID</u>	<u>Analytical Run</u>
7440-36-0	Antimony	0.33	ug/Filter	U		P	0.33	2	OPTIMA1	111109-2
7440-38-2	Arsenic	0.705	ug/Filter	B		P	0.5	2	OPTIMA1	111109-2
7440-39-3	Barium	0.128	ug/Filter	B		P	0.1	2	OPTIMA1	111109-2
7440-41-7	Beryllium	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2
7440-43-9	Cadmium	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2
7440-47-3	Chromium	0.15	ug/Filter	U		P	0.15	2	OPTIMA1	111109-2
7440-48-4	Cobalt	0.2	ug/Filter	U		P	0.2	2	OPTIMA1	111109-2
7440-50-8	Copper	1.96	ug/Filter			P	0.3	2	OPTIMA1	111109-2
7439-92-1	Lead	0.25	ug/Filter	U		P	0.25	2	OPTIMA1	111109-2
7439-98-7	Molybdenum	0.278	ug/Filter	B		P	0.2	2	OPTIMA1	111109-2
7440-02-0	Nickel	0.15	ug/Filter	U		P	0.15	2	OPTIMA1	111109-2
7782-49-2	Selenium	1.98	ug/Filter	B		P	0.5	2	OPTIMA1	111109-2
7440-22-4	Silver	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2
7440-28-0	Thallium	0.5	ug/Filter	U		P	0.5	2	OPTIMA1	111109-2
7440-62-2	Vanadium	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2
7440-66-6	Zinc	97.5	ug/Filter			P	0.33	2	OPTIMA1	111109-2


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METALS
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INORGANICS ANALYSIS DATA PACKAGE

SDG No: 239855

METHOD TYPE: SW846

SAMPLE ID: 239855003

CLIENT ID: SME-M-001

CONTRACT: ECOL00209

MATRIX: F

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS:

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M</u>	<u>MDL</u>	<u>DF</u>	<u>Instrument ID</u>	<u>Analytical Run</u>
7440-36-0	Antimony	0.33	ug/Filter	U		P	0.33	2	OPTIMA1	111109-2
7440-38-2	Arsenic	7.43	ug/Filter	B		P	2.5	10	OPTIMA1	111109-2
7440-39-3	Barium	3.69	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-41-7	Beryllium	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2
7440-43-9	Cadmium	0.5	ug/Filter	U		P	0.5	10	OPTIMA1	111109-2
7440-47-3	Chromium	11.8	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7440-48-4	Cobalt	10.4 J	ug/Filter			P	0.2	2	OPTIMA1	111109-2
7440-50-8	Copper	60.7	ug/Filter			P	1.5	10	OPTIMA1	111109-2
7439-92-1	Lead	2.25 J	ug/Filter	B		P	1.25	10	OPTIMA1	111109-2
7439-98-7	Molybdenum	1.86	ug/Filter	B		P	1	10	OPTIMA1	111109-2
7440-02-0	Nickel	7.82	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7782-49-2	Selenium	6.41	ug/Filter	B		P	2.5	10	OPTIMA1	111109-2
7440-22-4	Silver	0.565	ug/Filter	B		P	0.5	10	OPTIMA1	111109-2
7440-28-0	Thallium	0.5	ug/Filter	U		P	0.5	2	OPTIMA1	111109-2
7440-62-2	Vanadium	2.02	ug/Filter	B		P	0.5	10	OPTIMA1	111109-2
7440-66-6	Zinc	120 U	ug/Filter			P	1.65	10	OPTIMA1	111109-2

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METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 239855

METHOD TYPE: SW846

SAMPLE ID: 239855004

CLIENT ID: SME-M-002

CONTRACT: ECOL00209

MATRIX:F

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS:

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M</u>	<u>MDL</u>	<u>DF</u>	<u>Instrument ID</u>	<u>Analytical Run</u>
7440-36-0	Antimony	0.388	ug/Filter	B		P	0.33	2	OPTIMA1	111109-2
7440-38-2	Arsenic	2.27	ug/Filter	B		P	0.5	2	OPTIMA1	111109-2
7440-39-3	Barium	61	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-41-7	Beryllium	0.567	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-43-9	Cadmium	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2
7440-47-3	Chromium	3.56	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7440-48-4	Cobalt	0.704 J	ug/Filter			P	0.2	2	OPTIMA1	111109-2
7440-50-8	Copper	21.2	ug/Filter			P	0.3	2	OPTIMA1	111109-2
7439-92-1	Lead	6.71 J	ug/Filter			P	0.25	2	OPTIMA1	111109-2
7439-98-7	Molybdenum	0.375	ug/Filter	B		P	0.2	2	OPTIMA1	111109-2
7440-02-0	Nickel	1.07	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7782-49-2	Selenium	0.585	ug/Filter	B		P	0.5	2	OPTIMA1	111109-2
7440-22-4	Silver	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2
7440-28-0	Thallium	0.64	ug/Filter	B		P	0.5	2	OPTIMA1	111109-2
7440-62-2	Vanadium	1.86	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-66-6	Zinc	176 U	ug/Filter			P	0.33	2	OPTIMA1	111109-2

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METALS
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INORGANICS ANALYSIS DATA PACKAGE

SDG No: 239855

METHOD TYPE: SW846

SAMPLE ID: 239855005

CLIENT ID: SME-M-005

CONTRACT: ECOL00209

MATRIX: F

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS:

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M</u>	<u>MDL</u>	<u>DF</u>	<u>Instrument ID</u>	<u>Analytical Run</u>
7440-36-0	Antimony	2.96	ug/Filter			P	0.33	2	OPTIMA1	111109-2
7440-38-2	Arsenic	43.3	ug/Filter			P	0.5	2	OPTIMA1	111109-2
7440-39-3	Barium	90	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-41-7	Beryllium	0.101	ug/Filter	B		P	0.1	2	OPTIMA1	111109-2
7440-43-9	Cadmium	0.215	ug/Filter	B		P	0.1	2	OPTIMA1	111109-2
7440-47-3	Chromium	5	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7440-48-4	Cobalt	0.2	ug/Filter	U		P	0.2	2	OPTIMA1	111109-2
7440-50-8	Copper	9.59 U	ug/Filter			P	0.3	2	OPTIMA1	111109-2
7439-92-1	Lead	0.742 J	ug/Filter	B		P	0.25	2	OPTIMA1	111109-2
7439-98-7	Molybdenum	0.821	ug/Filter	B		P	0.2	2	OPTIMA1	111109-2
7440-02-0	Nickel	0.383	ug/Filter	B		P	0.15	2	OPTIMA1	111109-2
7782-49-2	Selenium	7.41	ug/Filter			P	0.5	2	OPTIMA1	111109-2
7440-22-4	Silver	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2
7440-28-0	Thallium	3.12	ug/Filter			P	0.5	2	OPTIMA1	111109-2
7440-62-2	Vanadium	2.56	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-66-6	Zinc	174 U	ug/Filter			P	0.33	2	OPTIMA1	111109-2

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METALS
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INORGANICS ANALYSIS DATA PACKAGE

SDG No: 239855

METHOD TYPE: SW846

SAMPLE ID: 239855006

CLIENT ID: SME-M-007

CONTRACT: ECOL00209

MATRIX: F

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS:

CAS No	Analyte	Result	Units	C	Qual	M	MDL	DF	Instrument ID	Analytical Run
7440-36-0	Antimony	3.02	ug/Filter			P	0.33	2	OPTIMA1	111109-2
7440-38-2	Arsenic	21.7	ug/Filter			P	0.5	2	OPTIMA1	111109-2
7440-39-3	Barium	184	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-41-7	Beryllium	2.27	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-43-9	Cadmium	1.03	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-47-3	Chromium	28.5	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7440-48-4	Cobalt	1.07 J	ug/Filter			P	0.2	2	OPTIMA1	111109-2
7440-50-8	Copper	328	ug/Filter			P	0.3	2	OPTIMA1	111109-2
7439-92-1	Lead	17.7 J	ug/Filter			P	0.25	2	OPTIMA1	111109-2
7439-98-7	Molybdenum	0.855	ug/Filter	B		P	0.2	2	OPTIMA1	111109-2
7440-02-0	Nickel	16.4	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7782-49-2	Selenium	6.09	ug/Filter			P	0.5	2	OPTIMA1	111109-2
7440-22-4	Silver	0.295	ug/Filter	B		P	0.1	2	OPTIMA1	111109-2
7440-28-0	Thallium	1.78	ug/Filter	B		P	0.5	2	OPTIMA1	111109-2
7440-62-2	Vanadium	4.81	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-66-6	Zinc	311 U	ug/Filter			P	0.33	2	OPTIMA1	111109-2

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METALS
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INORGANICS ANALYSIS DATA PACKAGE

SDG No: 239855

METHOD TYPE: SW846

SAMPLE ID: 239855007

CLIENT ID: SME-M-009

CONTRACT: ECOL00209

MATRIX:F

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS:

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M</u>	<u>MDL</u>	<u>DE</u>	<u>Instrument ID</u>	<u>Analytical Run</u>
7440-36-0	Antimony	0.33	ug/Filter	U		P	0.33	2	OPTIMA1	111109-2
7440-38-2	Arsenic	2.5	ug/Filter	U		P	2.5	10	OPTIMA1	111109-2
7440-39-3	Barium	4.44	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-41-7	Beryllium	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2
7440-43-9	Cadmium	0.5	ug/Filter	U		P	0.5	10	OPTIMA1	111109-2
7440-47-3	Chromium	8.38	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7440-48-4	Cobalt	1.85	ug/Filter			P	0.2	2	OPTIMA1	111109-2
7440-50-8	Copper	11.6	ug/Filter			P	1.5	10	OPTIMA1	111109-2
7439-92-1	Lead	1.25	ug/Filter	U		P	1.25	10	OPTIMA1	111109-2
7439-98-7	Molybdenum	1	ug/Filter	U		P	1	10	OPTIMA1	111109-2
7440-02-0	Nickel	3.97	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7782-49-2	Selenium	5.65	ug/Filter	B		P	2.5	10	OPTIMA1	111109-2
7440-22-4	Silver	0.5	ug/Filter	U		P	0.5	10	OPTIMA1	111109-2
7440-28-0	Thallium	0.5	ug/Filter	U		P	0.5	2	OPTIMA1	111109-2
7440-62-2	Vanadium	1.67	ug/Filter	B		P	0.5	10	OPTIMA1	111109-2
7440-66-6	Zinc	114	U ug/Filter			P	1.65	10	OPTIMA1	111109-2

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METALS
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INORGANICS ANALYSIS DATA PACKAGE

SDG No: 239855

METHOD TYPE: SW846

SAMPLE ID: 239855008

CLIENT ID: SME-M-015

CONTRACT: ECOL00209

MATRIX: F

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS:

CAS No	Analyte	Result	Units	C	Qual	M	MDL	DF	Instrument ID	Analytical Run
7440-36-0	Antimony	0.33	ug/Filter	U		P	0.33	2	OPTIMA1	111109-2
7440-38-2	Arsenic	1.34	ug/Filter	B		P	0.5	2	OPTIMA1	111109-2
7440-39-3	Barium	8.2	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-41-7	Beryllium	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2
7440-43-9	Cadmium	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2
7440-47-3	Chromium	0.342	ug/Filter	B		P	0.15	2	OPTIMA1	111109-2
7440-48-4	Cobalt	0.449	ug/Filter	B		P	0.2	2	OPTIMA1	111109-2
7440-50-8	Copper	3.51	ug/Filter			P	0.3	2	OPTIMA1	111109-2
7439-92-1	Lead	0.25	ug/Filter	U		P	0.25	2	OPTIMA1	111109-2
7439-98-7	Molybdenum	0.29	ug/Filter	B		P	0.2	2	OPTIMA1	111109-2
7440-02-0	Nickel	0.15	ug/Filter	U		P	0.15	2	OPTIMA1	111109-2
7782-49-2	Selenium	1.37	ug/Filter	B		P	0.5	2	OPTIMA1	111109-2
7440-22-4	Silver	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2
7440-28-0	Thallium	0.5	ug/Filter	U		P	0.5	2	OPTIMA1	111109-2
7440-62-2	Vanadium	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2
7440-66-6	Zinc	116	ug/Filter			P	0.33	2	OPTIMA1	111109-2

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METALS
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INORGANICS ANALYSIS DATA PACKAGE

SDG No: 239855

METHOD TYPE: SW846

SAMPLE ID: 239855009

CLIENT ID: SME-M-017

CONTRACT: ECOL00209

MATRIX: F

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS:

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M</u>	<u>MDL</u>	<u>DF</u>	<u>Instrument ID</u>	<u>Analytical Run</u>
7440-36-0	Antimony	1.11	ug/Filter			P	0.33	2	OPTIMA1	111109-2
7440-38-2	Arsenic	3.71	ug/Filter			P	0.5	2	OPTIMA1	111109-2
7440-39-3	Barium	41.1	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-41-7	Beryllium	0.793	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-43-9	Cadmium	0.164	ug/Filter	B		P	0.1	2	OPTIMA1	111109-2
7440-47-3	Chromium	14.4	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7440-48-4	Cobalt	2.45 J	ug/Filter			P	0.2	2	OPTIMA1	111109-2
7440-50-8	Copper	77.5	ug/Filter			P	0.3	2	OPTIMA1	111109-2
7439-92-1	Lead	15 J	ug/Filter			P	0.25	2	OPTIMA1	111109-2
7439-98-7	Molybdenum	1.51	ug/Filter			P	0.2	2	OPTIMA1	111109-2
7440-02-0	Nickel	15.6	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7782-49-2	Selenium	3.52	ug/Filter			P	0.5	2	OPTIMA1	111109-2
7440-22-4	Silver	0.273	ug/Filter	B		P	0.1	2	OPTIMA1	111109-2
7440-28-0	Thallium	0.5	ug/Filter	U		P	0.5	2	OPTIMA1	111109-2
7440-62-2	Vanadium	2.33	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-66-6	Zinc	317 U	ug/Filter			P	0.33	2	OPTIMA1	111109-2

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METALS
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INORGANICS ANALYSIS DATA PACKAGE

SDG No: 239855

METHOD TYPE: SW846

SAMPLE ID: 239855010

CLIENT ID: SMB-M-030

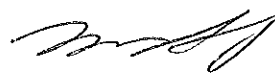
CONTRACT: ECOL00209

MATRIX:F

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS:

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M</u>	<u>MDL</u>	<u>DF</u>	<u>Instrument ID</u>	<u>Analytical Run</u>
7440-36-0	Antimony	0.33	ug/Filter	U		P	0.33	2	OPTIMA1	111109-2
7440-38-2	Arsenic	0.5	ug/Filter	U		P	0.5	2	OPTIMA1	111109-2
7440-39-3	Barium	6.76	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-41-7	Beryllium	0.261	ug/Filter	B		P	0.1	2	OPTIMA1	111109-2
7440-43-9	Cadmium	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2
7440-47-3	Chromium	0.502	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7440-48-4	Cobalt	0.2	ug/Filter	U		P	0.2	2	OPTIMA1	111109-2
7440-50-8	Copper	2.1 U	ug/Filter			P	0.3	2	OPTIMA1	111109-2
7439-92-1	Lead	0.25	ug/Filter	U		P	0.25	2	OPTIMA1	111109-2
7439-98-7	Molybdenum	0.2	ug/Filter	U		P	0.2	2	OPTIMA1	111109-2
7440-02-0	Nickel	0.19	ug/Filter	B		P	0.15	2	OPTIMA1	111109-2
7782-49-2	Selenium	0.828	ug/Filter	B		P	0.5	2	OPTIMA1	111109-2
7440-22-4	Silver	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2
7440-28-0	Thallium	0.5	ug/Filter	U		P	0.5	2	OPTIMA1	111109-2
7440-62-2	Vanadium	0.134	ug/Filter	B		P	0.1	2	OPTIMA1	111109-2
7440-66-6	Zinc	124 U	ug/Filter			P	0.33	2	OPTIMA1	111109-2


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METALS
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INORGANICS ANALYSIS DATA PACKAGE

SDG No: 239855

METHOD TYPE: SW846

SAMPLE ID: 239855011

CLIENT ID: SME-M-031

CONTRACT: ECOL00209

MATRIX: F

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS:

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M</u>	<u>MDL</u>	<u>DF</u>	<u>Instrument ID</u>	<u>Analytical Run</u>
7440-36-0	Antimony	2270	ug/Filter			P	1.65	10	OPTIMA1	111309-3
7440-38-2	Arsenic	12.5	ug/Filter			P	0.5	2	OPTIMA1	111109-2
7440-39-3	Barium	21	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-41-7	Beryllium	0.144	ug/Filter	B		P	0.1	2	OPTIMA1	111109-2
7440-43-9	Cadmium	1.81	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-47-3	Chromium	0.468	ug/Filter	B		P	0.15	2	OPTIMA1	111109-2
7440-48-4	Cobalt	0.2	ug/Filter	U		P	0.2	2	OPTIMA1	111109-2
7440-50-8	Copper	3.37 U	ug/Filter			P	0.3	2	OPTIMA1	111109-2
7439-92-1	Lead	6.02 J	ug/Filter			P	0.25	2	OPTIMA1	111109-2
7439-98-7	Molybdenum	0.358	ug/Filter	B		P	0.2	2	OPTIMA1	111109-2
7440-02-0	Nickel	0.152	ug/Filter	B		P	0.15	2	OPTIMA1	111109-2
7782-49-2	Selenium	5.91	ug/Filter			P	0.5	2	OPTIMA1	111109-2
7440-22-4	Silver	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2
7440-28-0	Thallium	0.5	ug/Filter	U		P	0.5	2	OPTIMA1	111109-2
7440-62-2	Vanadium	0.192	ug/Filter	B		P	0.1	2	OPTIMA1	111109-2
7440-66-6	Zinc	394 U	ug/Filter			P	0.33	2	OPTIMA1	111109-2

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METALS
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INORGANICS ANALYSIS DATA PACKAGE

SDG No: 239855

METHOD TYPE: SW846

SAMPLE ID: 239855012

CLIENT ID: SME-M-032

CONTRACT: ECOL00209

MATRIX: F

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS:

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M</u>	<u>MDL</u>	<u>DF</u>	<u>Instrument ID</u>	<u>Analytical Run</u>
7440-36-0	Antimony	3.92	ug/Filter			P	0.33	2	OPTIMA1	111109-2
7440-38-2	Arsenic	4.67	ug/Filter			P	0.5	2	OPTIMA1	111109-2
7440-39-3	Barium	151	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-41-7	Beryllium	1.98	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-43-9	Cadmium	0.109	ug/Filter	B		P	0.1	2	OPTIMA1	111109-2
7440-47-3	Chromium	6.06	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7440-48-4	Cobalt	0.515 J	ug/Filter			P	0.2	2	OPTIMA1	111109-2
7440-50-8	Copper	15.5	ug/Filter			P	0.3	2	OPTIMA1	111109-2
7439-92-1	Lead	1.77 J	ug/Filter			P	0.25	2	OPTIMA1	111109-2
7439-98-7	Molybdenum	0.352	ug/Filter	B		P	0.2	2	OPTIMA1	111109-2
7440-02-0	Nickel	1.57	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7782-49-2	Selenium	3.96	ug/Filter			P	0.5	2	OPTIMA1	111109-2
7440-22-4	Silver	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2
7440-28-0	Thallium	0.5	ug/Filter	U		P	0.5	2	OPTIMA1	111109-2
7440-62-2	Vanadium	1.33	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-66-6	Zinc	80.3 U	ug/Filter			P	0.33	2	OPTIMA1	111109-2

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METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 239855

METHOD TYPE: SW846

SAMPLE ID: 239855013

CLIENT ID: BAG-M-001

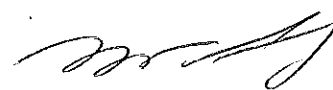
CONTRACT: ECOL00209

MATRIX: F

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS:

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M</u>	<u>MDL</u>	<u>DF</u>	<u>Instrument ID</u>	<u>Analytical Run</u>
7440-36-0	Antimony	3.3	ug/Filter	U		P	3.3	20	OPTIMA1	111109-2
7440-38-2	Arsenic	8.58	ug/Filter	B		P	5	20	OPTIMA1	111109-2
7440-39-3	Barium	7.78	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-41-7	Beryllium	1	ug/Filter	U		P	1	20	OPTIMA1	111109-2
7440-43-9	Cadmium	1	ug/Filter	U		P	1	20	OPTIMA1	111109-2
7440-47-3	Chromium	63	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7440-48-4	Cobalt	8.85	ug/Filter			P	0.2	2	OPTIMA1	111109-2
7440-50-8	Copper	50.9	ug/Filter			P	3	20	OPTIMA1	111109-2
7439-92-1	Lead	2.5	ug/Filter	U		P	2.5	20	OPTIMA1	111109-2
7439-98-7	Molybdenum	3.43	ug/Filter	B		P	2	20	OPTIMA1	111109-2
7440-02-0	Nickel	30.5	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7782-49-2	Selenium	17.6	ug/Filter	B		P	5	20	OPTIMA1	111109-2
7440-22-4	Silver	1.19	ug/Filter	B		P	1	20	OPTIMA1	111109-2
7440-28-0	Thallium	5	ug/Filter	U		P	5	20	OPTIMA1	111109-2
7440-62-2	Vanadium	7.34	ug/Filter			P	1	20	OPTIMA1	111109-2
7440-66-6	Zinc	107	ug/Filter			P	3.3	20	OPTIMA1	111109-2


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METALS
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INORGANICS ANALYSIS DATA PACKAGE

SDG No: 239855

METHOD TYPE: SW846

SAMPLE ID: 239855014

CLIENT ID: BAG-M-002

CONTRACT: ECOL00209

MATRIX: F

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS:

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M</u>	<u>MDL</u>	<u>DF</u>	<u>Instrument ID</u>	<u>Analytical Run</u>
7440-36-0	Antimony	0.432	ug/Filter	B		P	0.33	2	OPTIMA1	111109-2
7440-38-2	Arsenic	3.72	ug/Filter	B		P	2.5	10	OPTIMA1	111109-2
7440-39-3	Barium	36.7	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-41-7	Beryllium	3.21	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-43-9	Cadmium	0.5	ug/Filter	U		P	0.5	10	OPTIMA1	111109-2
7440-47-3	Chromium	6.48	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7440-48-4	Cobalt	4.26 J	ug/Filter			P	0.2	2	OPTIMA1	111109-2
7440-50-8	Copper	32.1	ug/Filter			P	1.5	10	OPTIMA1	111109-2
7439-92-1	Lead	1.64 J	ug/Filter	B		P	1.25	10	OPTIMA1	111109-2
7439-98-7	Molybdenum	1	ug/Filter	U		P	1	10	OPTIMA1	111109-2
7440-02-0	Nickel	7.44	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7782-49-2	Selenium	13.6	ug/Filter	B		P	2.5	10	OPTIMA1	111109-2
7440-22-4	Silver	0.632	ug/Filter	B		P	0.5	10	OPTIMA1	111109-2
7440-28-0	Thallium	2.5	ug/Filter	U		P	2.5	10	OPTIMA1	111109-2
7440-62-2	Vanadium	2.25	ug/Filter	B		P	0.5	10	OPTIMA1	111109-2
7440-66-6	Zinc	161 U	ug/Filter			P	1.65	10	OPTIMA1	111109-2

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METALS
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INORGANICS ANALYSIS DATA PACKAGE

SDG No: 239855

METHOD TYPE: SW846

SAMPLE ID: 239855015

CLIENT ID: BAG-M-003

CONTRACT: ECOL00209

MATRIX: F

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS:

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M</u>	<u>MDL</u>	<u>DF</u>	<u>Instrument ID</u>	<u>Analytical Run</u>
7440-36-0	Antimony	3.3	ug/Filter	U		P	3.3	20	OPTIMA1	111109-2
7440-38-2	Arsenic	5.62	ug/Filter	B		P	5	20	OPTIMA1	111109-2
7440-39-3	Barium	5.16	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-41-7	Beryllium	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2
7440-43-9	Cadmium	1	ug/Filter	U		P	1	20	OPTIMA1	111109-2
7440-47-3	Chromium	26	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7440-48-4	Cobalt	3.51	ug/Filter			P	0.2	2	OPTIMA1	111109-2
7440-50-8	Copper	45.9	ug/Filter			P	3	20	OPTIMA1	111109-2
7439-92-1	Lead	2.5	ug/Filter	U		P	2.5	20	OPTIMA1	111109-2
7439-98-7	Molybdenum	6.44	ug/Filter	B		P	2	20	OPTIMA1	111109-2
7440-02-0	Nickel	7.33	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7782-49-2	Selenium	13	ug/Filter	B		P	5	20	OPTIMA1	111109-2
7440-22-4	Silver	1	ug/Filter	U		P	1	20	OPTIMA1	111109-2
7440-28-0	Thallium	5	ug/Filter	U		P	5	20	OPTIMA1	111109-2
7440-62-2	Vanadium	6.68	ug/Filter			P	1	20	OPTIMA1	111109-2
7440-66-6	Zinc	111	ug/Filter			P	3.3	20	OPTIMA1	111109-2

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METALS
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INORGANICS ANALYSIS DATA PACKAGE

SDG No: 239855

METHOD TYPE: SW846

SAMPLE ID: 239855016

CLIENT ID: BAG-M-004

CONTRACT: ECOL00209

MATRIX: F

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS:

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M</u>	<u>MDL</u>	<u>DF</u>	<u>Instrument ID</u>	<u>Analytical Run</u>
7440-36-0	Antimony	1.44	ug/Filter			P	0.33	2	OPTIMA1	111109-2
7440-38-2	Arsenic	6.72	ug/Filter	B		P	5	20	OPTIMA1	111109-2
7440-39-3	Barium	13.2	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-41-7	Beryllium	0.209	ug/Filter	B		P	0.1	2	OPTIMA1	111109-2
7440-43-9	Cadmium	1	ug/Filter	U		P	1	20	OPTIMA1	111109-2
7440-47-3	Chromium	55	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7440-48-4	Cobalt	13.6	ug/Filter			P	0.2	2	OPTIMA1	111109-2
7440-50-8	Copper	677	ug/Filter			P	3	20	OPTIMA1	111109-2
7439-92-1	Lead	2.5	ug/Filter	U		P	2.5	20	OPTIMA1	111109-2
7439-98-7	Molybdenum	27.3	ug/Filter			P	2	20	OPTIMA1	111109-2
7440-02-0	Nickel	232	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7782-49-2	Selenium	9.45	ug/Filter	B		P	5	20	OPTIMA1	111109-2
7440-22-4	Silver	1.3	ug/Filter	B		P	1	20	OPTIMA1	111109-2
7440-28-0	Thallium	5	ug/Filter	U		P	5	20	OPTIMA1	111109-2
7440-62-2	Vanadium	2.63	ug/Filter	B		P	1	20	OPTIMA1	111109-2
7440-66-6	Zinc	151	ug/Filter	U		P	3.3	20	OPTIMA1	111109-2

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METALS
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INORGANICS ANALYSIS DATA PACKAGE

SDG No: 239855

METHOD TYPE: SW846

SAMPLE ID: 239855017

CLIENT ID: BAG-M-005

CONTRACT: ECOL00209

MATRIX: F

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS:

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M</u>	<u>MDL</u>	<u>DF</u>	<u>Instrument ID</u>	<u>Analytical Run</u>
7440-36-0	Antimony	4.54	J ug/Filter			P	0.33	2	OPTIMA1	111109-2
7440-38-2	Arsenic	3.88	ug/Filter			P	0.5	2	OPTIMA1	111109-2
7440-39-3	Barium	164	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-41-7	Beryllium	1.98	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-43-9	Cadmium	0.527	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-47-3	Chromium	8.13	J ug/Filter			P	0.15	2	OPTIMA1	111109-2
7440-48-4	Cobalt	0.676	J ug/Filter			P	0.2	2	OPTIMA1	111109-2
7440-50-8	Copper	55.7	J ug/Filter			P	0.3	2	OPTIMA1	111109-2
7439-92-1	Lead	16.1	J ug/Filter			P	0.25	2	OPTIMA1	111109-2
7439-98-7	Molybdenum	0.485	J ug/Filter	B		P	0.2	2	OPTIMA1	111109-2
7440-02-0	Nickel	6.13	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7782-49-2	Selenium	2.07	ug/Filter	B		P	0.5	2	OPTIMA1	111109-2
7440-22-4	Silver	0.218	J ug/Filter	B		P	0.1	2	OPTIMA1	111109-2
7440-28-0	Thallium	0.5	ug/Filter	U		P	0.5	2	OPTIMA1	111109-2
7440-62-2	Vanadium	2.72	J ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-66-6	Zinc	2080	J ug/Filter			P	0.825	5	OPTIMA1	111309-3

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METALS
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INORGANICS ANALYSIS DATA PACKAGE

SDG No: 239855

METHOD TYPE: SW846

SAMPLE ID: 239855018

CLIENT ID: BAG-M-1005

CONTRACT: ECOL00209

MATRIX:F

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS:

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M</u>	<u>MDL</u>	<u>DF</u>	<u>Instrument ID</u>	<u>Analytical Run</u>
7440-36-0	Antimony	9.45	ug/Filter			P	0.33	2	OPTIMA1	111109-2
7440-38-2	Arsenic	7.86	ug/Filter			P	0.5	2	OPTIMA1	111109-2
7440-39-3	Barium	221	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-41-7	Beryllium	3.44	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-43-9	Cadmium	1.49	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-47-3	Chromium	16.9	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7440-48-4	Cobalt	1.25	ug/Filter			P	0.2	2	OPTIMA1	111109-2
7440-50-8	Copper	113	ug/Filter			P	0.3	2	OPTIMA1	111109-2
7439-92-1	Lead	33.2	ug/Filter			P	0.25	2	OPTIMA1	111109-2
7439-98-7	Molybdenum	0.917	ug/Filter	B		P	0.2	2	OPTIMA1	111109-2
7440-02-0	Nickel	12.7	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7782-49-2	Selenium	4.43	ug/Filter			P	0.5	2	OPTIMA1	111109-2
7440-22-4	Silver	0.412	ug/Filter	B		P	0.1	2	OPTIMA1	111109-2
7440-28-0	Thallium	0.544	ug/Filter	B		P	0.5	2	OPTIMA1	111109-2
7440-62-2	Vanadium	4.88	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-66-6	Zinc	4740	ug/Filter			P	1.65	10	OPTIMA1	111309-3

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METALS
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INORGANICS ANALYSIS DATA PACKAGE

SDG No: 239855

METHOD TYPE: SW846

SAMPLE ID: 239855019

CLIENT ID: BAG-M-009

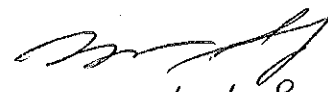
CONTRACT: ECOL00209

MATRIX: F

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS:

CAS No	Analyte	Result	Units	C	Qual	M	MDL	DF	Instrument ID	Analytical Run
7440-36-0	Antimony	1.17	ug/Filter			P	0.33	2	OPTIMA1	111109-2
7440-38-2	Arsenic	5.16	ug/Filter			P	0.5	2	OPTIMA1	111109-2
7440-39-3	Barium	105	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-41-7	Beryllium	1.56	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-43-9	Cadmium	0.173	ug/Filter	B		P	0.1	2	OPTIMA1	111109-2
7440-47-3	Chromium	6.09	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7440-48-4	Cobalt	3.33 J	ug/Filter			P	0.2	2	OPTIMA1	111109-2
7440-50-8	Copper	27.2	ug/Filter			P	0.3	2	OPTIMA1	111109-2
7439-92-1	Lead	4.91 J	ug/Filter			P	0.25	2	OPTIMA1	111109-2
7439-98-7	Molybdenum	0.2	ug/Filter	U		P	0.2	2	OPTIMA1	111109-2
7440-02-0	Nickel	4.03	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7782-49-2	Selenium	3.46	ug/Filter			P	0.5	2	OPTIMA1	111109-2
7440-22-4	Silver	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2
7440-28-0	Thallium	0.5	ug/Filter	U		P	0.5	2	OPTIMA1	111109-2
7440-62-2	Vanadium	1.7	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-66-6	Zinc	205 U	ug/Filter			P	0.33	2	OPTIMA1	111109-2


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METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 239855

METHOD TYPE: SW846

SAMPLE ID: 239855020

CLIENT ID: BAG-M-015

CONTRACT: ECOL00209

MATRIX:F

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS:

CAS No	Analyte	Result	Units	C	Qual	M	MDL	DF	Instrument ID	Analytical Run
7440-36-0	Antimony	0.959	ug/Filter	B		P	0.33	2	OPTIMA1	111109-2
7440-38-2	Arsenic	3.42	ug/Filter			P	0.5	2	OPTIMA1	111109-2
7440-39-3	Barium	27.8	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-41-7	Beryllium	0.283	ug/Filter	B		P	0.1	2	OPTIMA1	111109-2
7440-43-9	Cadmium	0.133	ug/Filter	B		P	0.1	2	OPTIMA1	111109-2
7440-47-3	Chromium	3.29	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7440-48-4	Cobalt	1.49	ug/Filter			P	0.2	2	OPTIMA1	111109-2
7440-50-8	Copper	13.3	ug/Filter			P	0.3	2	OPTIMA1	111109-2
7439-92-1	Lead	2.34	ug/Filter			P	0.25	2	OPTIMA1	111109-2
7439-98-7	Molybdenum	0.445	ug/Filter	B		P	0.2	2	OPTIMA1	111109-2
7440-02-0	Nickel	1.26	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7782-49-2	Selenium	0.521	ug/Filter	B		P	0.5	2	OPTIMA1	111109-2
7440-22-4	Silver	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2
7440-28-0	Thallium	1.64	ug/Filter	B		P	0.5	2	OPTIMA1	111109-2
7440-62-2	Vanadium	0.758	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-66-6	Zinc	131	ug/Filter			P	0.33	2	OPTIMA1	111109-2

[Signature]
12/21/09

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 239855

METHOD TYPE: SW846

SAMPLE ID: 239855021

CLIENT ID: BAG-M-1015

CONTRACT: ECOL00209

MATRIX:F

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS:

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M</u>	<u>MDL</u>	<u>DF</u>	<u>Instrument ID</u>	<u>Analytical Run</u>
7440-36-0	Antimony	0.806	ug/Filter	B		P	0.33	2	OPTIMA1	110909B-1
7440-38-2	Arsenic	4.09	ug/Filter			P	0.5	2	OPTIMA1	110909B-1
7440-39-3	Barium	37.5	ug/Filter			P	0.1	2	OPTIMA1	110909B-1
7440-41-7	Beryllium	0.249	ug/Filter	B		P	0.1	2	OPTIMA1	110909B-1
7440-43-9	Cadmium	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	110909B-1
7440-47-3	Chromium	2.6	ug/Filter			P	0.15	2	OPTIMA1	110909B-1
7440-48-4	Cobalt	0.932 J	ug/Filter			P	0.2	2	OPTIMA1	110909B-1
7440-50-8	Copper	9.88	ug/Filter			P	0.3	2	OPTIMA1	110909B-1
7439-92-1	Lead	1.55 J	ug/Filter			P	0.25	2	OPTIMA1	110909B-1
7439-98-7	Molybdenum	0.514	ug/Filter	B		P	0.2	2	OPTIMA1	110909B-1
7440-02-0	Nickel	1.03	ug/Filter			P	0.15	2	OPTIMA1	110909B-1
7782-49-2	Selenium	0.614	ug/Filter	B		P	0.5	2	OPTIMA1	110909B-1
7440-22-4	Silver	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	110909B-1
7440-28-0	Thallium	1.71	ug/Filter	B		P	0.5	2	OPTIMA1	110909B-1
7440-62-2	Vanadium	0.701	ug/Filter			P	0.1	2	OPTIMA1	110909B-1
7440-66-6	Zinc	129 U	ug/Filter			P	0.33	2	OPTIMA1	110909B-1

Mr. [Signature]
12/21/09

METALS
-3b-
PREPARATION BLANK SUMMARY

SDG NO. 239855

Contract: ECOL00209

Matrix: FILTER

<u>Sample ID</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Acceptance Window</u>	<u>Conc Qual</u>	<u>M</u>	<u>MDL</u>	<u>RDL</u>
1201960520	Antimony	0.33	ug/Filter	+/-1.0	U	P	0.33	1
	Arsenic	0.605	ug/Filter	+/-3.0	B	P	0.5	3
	Barium	0.1	ug/Filter	+/-0.5	U	P	0.1	0.5
	Beryllium	0.1	ug/Filter	+/-0.5	U	P	0.1	0.5
	Cadmium	0.1	ug/Filter	+/-0.5	U	P	0.1	0.5
	Chromium	0.15	ug/Filter	+/-0.5	U	P	0.15	0.5
	Cobalt	0.2	ug/Filter	+/-0.5	U	P	0.2	0.5
	Copper	0.3	ug/Filter	+/-1.0	U	P	0.3	1
	Lead	0.25	ug/Filter	+/-1.0	U	P	0.25	1
	Molybdenum	0.2	ug/Filter	+/-1.0	U	P	0.2	1
	Nickel	0.15	ug/Filter	+/-0.5	U	P	0.15	0.5
	Selenium	0.858	ug/Filter	+/-3.0	B	P	0.5	3
	Silver	0.1	ug/Filter	+/-0.5	U	P	0.1	0.5
	Thallium	-0.804	ug/Filter	+/-2.0	B	P	0.5	2
	Vanadium	0.1	ug/Filter	+/-0.5	U	P	0.1	0.5
	Zinc	0.33	ug/Filter	+/-1.0	U	P	0.33	1
1201960549	Antimony	0.33	ug/Filter	+/-1.0	U	P	0.33	1
	Arsenic	0.771	ug/Filter	+/-3.0	B	P	0.5	3
	Barium	0.1	ug/Filter	+/-0.5	U	P	0.1	0.5
	Beryllium	0.1	ug/Filter	+/-0.5	U	P	0.1	0.5
	Cadmium	0.1	ug/Filter	+/-0.5	U	P	0.1	0.5
	Chromium	0.15	ug/Filter	+/-0.5	U	P	0.15	0.5
	Cobalt	0.2	ug/Filter	+/-0.5	U	P	0.2	0.5
	Copper	0.3	ug/Filter	+/-1.0	U	P	0.3	1
	Lead	0.322	ug/Filter	+/-1.0	B	P	0.25	1
	Molybdenum	0.2	ug/Filter	+/-1.0	U	P	0.2	1
	Nickel	0.15	ug/Filter	+/-0.5	U	P	0.15	0.5
	Selenium	0.5	ug/Filter	+/-3.0	U	P	0.5	3
	Silver	-0.168	ug/Filter	+/-0.5	B	P	0.1	0.5
	Thallium	0.5	ug/Filter	+/-2.0	U	P	0.5	2
	Vanadium	0.1	ug/Filter	+/-0.5	U	P	0.1	0.5
	Zinc	0.33	ug/Filter	+/-1.0	U	P	0.33	1

[Signature]
12/21/09

SW846

20091055865

GEL Chain of Custody and Analytical Request

GEL Work Order Number: 239855

Client Name: Ecology and Environment, Inc. **Phone #:** 562-997-1700

Project/Site Name: HALACO BUILDING ASSESSMENT **Fax #:** 562-391-4486

Address: 3700 INDUSTRIAL AVE. HAZELWOOD, CA 90732

Collected by: [Signature] **Send Results To:** msong@enc.com

GEL Laboratories, LLC
2040 Savage Road
Charleston, SC 29407
Phone: (843) 556-8171
Fax: (843) 766-1178

Sample Analysis Requested (Fill in the number of containers for each test)

Sample ID	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code	Field Filtered	Sample Matrix	Should this sample be considered:	Total number of containers	Preservative Type (6)	Comments
BLK-01	10/21/07	1500	TB		P	NO Hg (AM) 6010 B (MMS)	1		
BLK-02	10/22/07	0700	TB		P		1		Send the results to
SME-M-001	10/22/07	0810	N		P		1		
SME-M-002	10/22/07	1044	N		P		1		
SME-M-005	10/22/07	1116	N		P		1		msong@enc.com
SME-M-007	10/22/07	1136	N		P		1		
SME-M-009	10/22/07	1150	N		P		1		
SME-M-015	10/22/07	1415	N		P		1		
SME-M-017	10/22/07	1432	N		P		1		
SME-M-030	10/22/07	1218	N		P		1		

TAT Requested: (Normal) **Rush:** (Subject to Surcharge) **Spec:** (Subject to Surcharge) **QC Summary:** Level 1 / Level 2 / Level 3 / Level 4

Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards.

No Hg for wipe samples only.

Chain of Custody Signatures

Relinquished By (Signed)	Date	Time	Received by (Signed)	Date	Time
[Signature]	10/26/07	1330	R.M. Stalling	10/27/07	900
2					
3					

Sample Shipping and Delivery Details

Method of Shipment: FedEx **Date Shipped:** 10/26/09

Airbill #: 8682-5163-7490

Airbill #:

For Lab Receiving Use Only

Capacity Seal Intact? YES

Cooling Temp: 5 C

1.) Chain of Custody Number = Client Determined

2.) QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite

3.) Field Filtered: For liquid matrices, indicate with a - Y - for yes the sample was field filtered or - N - for sample was not field filtered.

4.) Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W-Water, SO=Soil, SD=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, F=Fecal, N=Nasal

5.) Sample Analysis Requested: Analytical method requested (i.e. 8260B, 6010B/4700A) and number of containers provided for each (i.e. 8260B - 3, 6010B/4700A - 1).

6.) Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate, if no preservative is added = leave field blank

WHITE = LABORATORY **YELLOW = FILE** **PINK = CLIENT**

GEL Chain of Custody and Analytical Request		GEL Laboratories, LLC 2040 Savage Road Charleston, SC 29407 Phone: (843) 556-8171 Fax: (843) 766-1178								
GEL Work Order Number:		Phone #:								
Client Name: Ecology and Environment		Fax #:								
Project/Site Name:		Address:								
Collected by: JCH		Send Results To: msong@enc.com								
Sample ID <small>* For composites - indicate start and stop date/time</small>	Date Collected (mm-dd-yy)	Time Collected (Military) (hh:mm)	QC Code (m)	Field Filtered (y)	Sample Matrix (n)	TSCA Regulated Radioactive	Should this sample be considered:	Total number of containers	Preservative Type (6)	Comments
SNE-M-031	10/22/07	1419	N		P			1	<- Preservative Type (6)	Note: extra sample is required for sample specific QC
SNE-M-032	10/22/07	1425	N		P			1		
BAG-M-001	10/21/09	1515	N		P			1		
BAG-M-002	10/21/09	1525	N		P			1		
BAG-M-003	10/21/07	1540	N		P			1		
BAG-M-004	10/21/09	1610	N		P			1		
BAG-M-005	10/22/07	1505	N		P			1		
BAG-M-100S	10/22/07	1507	FD		P			1		
BAG-M-007	10/22/07	1545	N		P			1		
BAG-M-01S	10/22/07	1705	FD		P			1		
TAT Requested: Normal Rush: Specify: (Subject to Surcharge) Fax Results: Yes / No						Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4				
Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards										
Chain of Custody Signatures						Sample Shipping and Delivery Details				
Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time					
JCH	10/26/07	1330	R.M. Stollery	10/27/07	900					
Method of Shipment:						Date Shipped:				
Airbill #:						Airbill #:				
Airbill #:						Airbill #:				
1.) Chain of Custody Number = Client Determined 2.) QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite 3.) Field Filtered: For liquid matrices, indicate with a - Y - for yes the sample was field filtered or - N - for sample was not field filtered. 4.) Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W-Water, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O-Oil, F-Filter, P-Wipe, U-Urine, F-Fecal, N-Nail 5.) Sample Analysis Requested: Analytical method requested (i.e. E260B, G010B/7470A) and number of containers provided for each (i.e. E260B - 3, G010B/7470A - 1). 6.) Preservative Types: HA = Hydrochloric Acid, NT = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, AA = Ascorbic Acid, IX = Hexane, ST = Sodium Thiosulfate, If no preservative is added = leave field blank WHITE = LABORATORY YELLOW = FIELD For Lab Receiving Use Only Custody Seal Intact? YES NO Cooler Temp: 5 C										

20071055866 (oil only)

GEL Chain of Custody and Analytical Request

GEL Work Order Number: 239850

Client Name: Ecology and Environment, Inc. Phone #: _____

Project/Site Name: _____ Fax #: _____

Address: _____

Collected by: *[Signature]* Send Results To: *msong@enc.com*

Sample Analysis Requested (Fill in the number of containers for each test)

Sample ID	Date Collected (mm-dd-yy)	Time Collected (hh:mm)	QC Code	Field Filtered	Sample Matrix	Should this sample be considered:		Total number of containers	Sample Analysis Requested				Preservative Type (6)	Comments	
						Radioactive	TSCA Regulated		MS/MSD	HASL 300 (Spec)	EPA 8260	EPA 8015M			EPA 6010B (CM)
BAG-M-1015	10/22/07	1707	FD		P			1							
SME-S-001	10/22/09	0810	N		SO			2							
SME-S-002	10/23/09	1030	N		SO			3							
SME-S-003	10/23/09	1035	N		SO			3							
SME-S-1003	10/23/09	1037	PD		SO			3							
SME-S-004	10/22/07	0830	N		SO			1							
SME-S-005	10/23/09	1042	N		SO			3							
SME-S-006	10/23/09	1110	N		SO			3							
BAG-S-001	10/23/09	0700	N		SO			3							
BAG-S-002	10/23/09	1055	N		SO			3							

Sample Shipping and Delivery Details

Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Sample Collection Time Zone: Pacific

Chain of Custody Signatures:

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
<i>[Signature]</i>	10/26/07	1330	<i>R.M. Stalling</i>	10/23/09	900

Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards
8015M for TPH / Diesel & Motoroil

For Lab Receiving Use Only

Custody Seal Intact? YES

Cooler Temp: 5 C

1) Chain of Custody Number = Client Determined

2) QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, C = Gmb, C = Composite

3) Field Filtered: For liquid matrices, indicate with a - Y - for yes the sample was field filtered or - N - for sample was not field filtered.

4) Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W=Water, SO=Soil, SD=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Peel, N=Nail

5) Sample Analysis Requested: Analytical method requested (i.e. 8260B, 6010B/7470A) and number of containers provided for each (i.e. 8260B - 3, 6010B/7470A - 1).

6) Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, RX = Hexane, ST = Sodium Thiosulfate. If no preservative is added = leave field blank

WHITE = LABORATORY
 YELLOW = FILE
 PINK = CLIENT

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
Project Number: 002693.2053.01RA	TDD No: TO2-09-09-0002

Laboratory: GEL Laboratories, LLC	Lab Project Number: 239856
Sampling Dates: 10/22/09 & 10/23/09	Sample Matrix: Soil
Analytical Method: METALS (EPA 8010B)	Data Reviewer: M. Song

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song
 Technical QA Reviewer: Howard Edwards
 Project Manager: Dan Haag

Date: 12/7/09
 Date: 12/8/09
 Date: 12/9/09

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	SME-S-001	239856-001
2	SME-S-002	239856-002
3	SME-S-003	239856-003
4	SME-S-1003	239856-004
5	SME-S-004	239856-005
6	SME-S-005	239856-006
7	SME-S-006	239856-007
8	BAG-S-001	239856-008
9	BAG-S-002	239856-009
10	BAG-S-003	239856-010
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
Project Number: 002693.2053.01RA	TDD No: TO2-09-09-09-0002

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- ☒ Included: no problems
- ☐ * Included: problems noted in review
- ☐ O Not Included and/or Not Available
- ☐ NR Not Required
- ☐ RS Provided As Re-submission

Case Narrative:

- ☒ Case Narrative present

Quality Control Summary Package:

- ☒ Data Summary sheets
- ☒ Initial and Continuing Calibration results
- ☒ CRDL Standard results
- ☒ Preparation Blank and Calibration Blank results
- ☒ ICP Interference Check Sample results
- ☐ * Matrix Spike recoveries
- ☐ * Matrix Duplicate results
- ☒ Laboratory Control Sample recoveries
- ☒ Method of Standard Additions results
- ☐ NR ICP Serial Dilution results
- ☒ Instrument Detection Limits
- ☒ ICP Interelement Correction Factors
- ☐ NR ICP Linear Ranges
- ☒ Preparation Log
- ☒ Analysis Run Log

Raw QC Data Package Section

- ☒ Chain-of-Custody Records
- ☒ Instrument Printouts
- ☒ Sample Preparation Notebook Pages
- ☒ Logbook and Worksheet Pages
- ☐ NR Percent Solids Determination

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
Project Number: 002693.2053.01RA	TDD No: TO2-09-09-09-0002

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	Holding Times	YES
2	Initial and Continuing Calibrations	YES
3	Laboratory Control Sample	YES
4	Matrix Spike	YES
5	Blanks and Background Samples	YES
6	Duplicate Analyses	NO
7	Interference Check Samples and Serial Dilution Analysis	YES
8	Post Digestion Spike and Standard Addition Analysis	N/A
9	Analyte Quantitation	YES
10	Overall Assessment of Data	YES
11	Usability of Data	YES

Comments: N/A: Not Applicable.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
Project Number: 002693.2053.01RA	TDD No: TO2-09-09-09-0002

1. HOLDING TIMES

☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:
Mercury: 28 days (from collection) for analysis.
Hexavalent chromium: 24 hours (from collection) for analysis.
All other metals: 180 days (from collection) for analysis.

Comments: All holding times were met.

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 80-120% for mercury and tin, and 90-110% for all other metals. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 65% or above 135% (for mercury and tin) or below 75% or above 125% (for all other metals), all associated data are rejected (R).

Comments: All recoveries of metals in initial and continuing calibration verifications were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
Project Number: 002693.2053.01RA	TDD No: TO2-09-09-09-0002

3. LABORATORY CONTROL SAMPLE

- ☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Percent recoveries of LCS were within the control limits.

4. MATRIX SPIKE

- ☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Sample SME-S-002 was designated for matrix spike and matrix spike duplicate analysis. Recoveries of Ba, Cr, Cu, Pb, Ni, Se, and Zn were outside of required range. Qualification was not required because the amount of these metals present in the parent sample was greater than 4 times the amount spiked.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
Project Number: 002693.2053.01RA	TDD No: TO2-09-09-09-0002

5. BLANKS AND BACKGROUND SAMPLES

☒ Acceptable
☐ Detection Limits Adjusted

The following blanks were analyzed:

☒ Method (preparation) Blanks
☐ Field Blanks
☐ Calibration Blanks
☐ Rinsate Blanks
☐ Background Samples

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at reporting limit level.

6. DUPLICATE ANALYSES

☐ Acceptable
☒ Acceptable with qualification
☐ Unacceptable
☐ No Duplicates Analyzed

Type of duplicates analyzed:

☒ Field Duplicates
☐ Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
Project Number: 002693.2053.01RA	TDD No: TO2-09-09-09-0002

Analyte (mg/kg)	SME-S-003	SME-S-1003	RPD (%)
Antimony	7.56	8.14	7
Arsenic	33.7	39.3	15
Barium	167	149	11
Beryllium	5.65	6.35	12
Cadmium	1.38	1.63	17
Chromium	89.4	85.2	5
Cobalt	6.09	7.52	21
Copper	622	244	87*
Lead	140	112	22
Molybdenum	13.8	15.3	10
Nickel	75.1	78.5	4
Selenium	48.8	31.6	43*
Silver	1.57	<1.19	Not calculated
Thallium	<5.73	9.89	Not calculated
Vanadium	13.5	15.2	12
Zinc	5580	3610	43*

*: RPD>35%

Comments: SME-S-1003 was a field duplicate of SM-S-003 and the detected Cu, Se, and Zn results were qualified as estimated (J).

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
Project Number: 002693.2053.01RA	TDD No: TO2-09-09-09-0002

7. INTERFERENCE CHECK SAMPLES AND SERIAL DILUTION ANALYSIS

☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ Not required

Interference Check Samples (ICS) - Unless flagged below, an ICS was analyzed at the beginning and end of each run and at least twice every eight hours. Recoveries were within a range of 80-120%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J) if the concentrations of Al, Ca, Fe, or Mg are higher in the sample than in the ICS.

Serial Dilution Analysis - Unless flagged below, a serial dilution analysis was performed at a rate of one per 20 samples on a sample having analyte concentrations greater than 50 times the IDL. Percent differences were within a range of 0-10%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: ICS recoveries were within the control limit.

Sample SME-S-002 was used for serial dilution and percent differences were less than 10%.

8. POST DIGESTION SPIKE AND STANDARD ADDITIONS

☐ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☒ Not required

Post-digestion spikes - If a furnace AA result was flagged by the laboratory with an E to indicate interference, and the associated post-digestion spike recovery was less than 10%, the associated results are rejected (R).

Method of Standard Additions - If the method of standard additions was required and the correlation coefficient was less than 0.995, the associated results were qualified as estimated (J).

Comments:

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
Project Number: 002693.2053.01RA	TDD No: TO2-09-09-09-0002

9. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

$$\text{ug/L} = \frac{(\text{Instrument printout concentration, mg/L})(1000 \text{ ug/mg})(\text{final volume of extract, mL})}{(\text{Initial volume of extract, mL})}$$

Soil samples:

$$\text{mg/kg} = \frac{(\text{Instrument printout concentration, mg/L})(\text{final volume of extract, mL})(0.001 \text{ L/mL})}{(\text{weight of sample extracted, g})(0.001 \text{ kg/g})(\text{fraction solids})}$$

Comments: Analyte quantitation is acceptable.

Sample SME-S-003

Ba: (1455.3 ug/L) (0.05L/0.525g) (100/83) = 166.99 ug/g= 166.99 mg/kg.

Lab reported 167 mg/kg.

Cu: (542.64 ug/L) (0.05 L/0.525g) (100/83) (10) = 622.65 ug/g= 622.65 mg/kg.

Lab reported 622 mg/kg.

Pb: (121.84 ug/L) (0.05L/0.525g) (100/83) (10) = 139.8 ug/g= 139.8 mg/kg.

Lab reported 140 mg/kg.

Zn: (4865.8 ug/L) (0.05L/0.525g) (100/83) (10) = 5583 ug/g= 5583 mg/kg.

Lab reported 5580 mg/kg.

10. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

☐ Acceptable
☒ Acceptable with Qualification
☐ Rejected

Accepted data meet the minimum requirements for the following EPA data category:

☐ ERS Screening
☐ Non-definitive with 10 % Confirmation by Definitive Methodology
☐ Definitive, Comprehensive Statistical Error Determination was performed.
☒ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
Project Number: 002693.2053.01RA	TDD No: TO2-09-09-09-0002

11. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the EPA EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM QUALITY ASSURANCE SAMPLING PLAN FOR SOIL, WATER AND MISCELLANEOUS MATRIX SAMPLING, HALACO BUILDING ASSESSMENT, OXNARD, VENTURA COUNTY, CALIFORNIA, OCTOBER 16, 2009 (QASP).

The following data use objective was indicated in the QASP:

TO ASSIST IN DETERMINING THE PRESENCE OR ABSENCE OF A HAZARDOUS MATERIAL OR SUBSTANCE AT LEVELS ABOVE AN AVAILABLE DETECTION OR QUANTIFICATION LEVEL.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVE.

B. These data meet quality objectives stated in the QASP.

AS INDICATED IN SECTION 2.4 OF THE QASP, THE INVESTIGATION WILL GENERATE BOTH SCREENING AND DEFINITIVE DATA AND TABLE E OF THE QASP OUTLINES THE DATA QUALITY INDICATOR GOALS APPLICABLE TO THE DEFINITIVE DATA QUALITY LEVEL. THE DATA IN THIS PACKAGE MEET THESE REQUIREMENTS.

12. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 239856

METHOD TYPE: SW846

SAMPLE ID: 239856001

CLIENT ID: SME-S-001

CONTRACT: ECOL00209

MATRIX:S

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS: 72

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M</u>	<u>MDL</u>	<u>DF</u>	<u>Instrument ID</u>	<u>Analytical Run</u>
7440-36-0	Antimony	4.4	mg/kg	U		P	4.4	10	OPTIMA2	110609A-4
7440-38-2	Arsenic	14.5	mg/kg	B	*	P	6.67	10	OPTIMA2	110609A-4
7440-39-3	Barium	237	mg/kg		N	P	1.33	10	OPTIMA2	110609A-4
7440-41-7	Beryllium	4.13	mg/kg	B		P	1.33	10	OPTIMA2	110609A-4
7440-43-9	Cadmium	5.55	mg/kg	B		P	1.33	10	OPTIMA2	110609A-4
7440-47-3	Chromium	81.3	mg/kg		*N	P	2	10	OPTIMA2	110609A-4
7440-48-4	Cobalt	20	mg/kg			P	2	10	OPTIMA2	110609A-4
7440-50-8	Copper	201 J	mg/kg		*N	P	4	10	OPTIMA2	110609A-4
7439-92-1	Lead	44.4	mg/kg		N	P	3.34	10	OPTIMA2	110609A-4
7439-98-7	Molybdenum	32.5	mg/kg			P	2.67	10	OPTIMA2	110609A-4
7440-02-0	Nickel	49.8	mg/kg		*EN	P	2	10	OPTIMA2	110609A-4
7782-49-2	Selenium	15.6 J	mg/kg	B	N	P	6.67	10	OPTIMA2	110609A-4
7440-22-4	Silver	1.92	mg/kg	B		P	1.33	10	OPTIMA2	110609A-4
7440-28-0	Thallium	6.67	mg/kg	U	*N	P	6.67	10	OPTIMA2	110609A-4
7440-62-2	Vanadium	10.6	mg/kg			P	1.33	10	OPTIMA2	110609A-4
7440-66-6	Zinc	1070 J	mg/kg		*	P	4.4	10	OPTIMA2	110609A-4

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METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 239856

METHOD TYPE: SW846

SAMPLE ID: 239856002

CLIENT ID: SME-S-002

CONTRACT: ECOL00209

MATRIX: S

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS: 83

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M</u>	<u>MDL</u>	<u>DF</u>	<u>Instrument ID</u>	<u>Analytical Run</u>
7440-36-0	Antimony	6.13	mg/kg			P	0.392	1	OPTIMA1	110609E-1
7440-38-2	Arsenic	21.9	mg/kg	B	*	P	5.94	10	OPTIMA1	110909B-2
7440-39-3	Barium	856	mg/kg		N	P	0.119	1	OPTIMA1	110609E-1
7440-41-7	Beryllium	72.5	mg/kg			P	0.119	1	OPTIMA1	110609E-1
7440-43-9	Cadmium	1.68	mg/kg	B		P	1.19	10	OPTIMA1	110909B-2
7440-47-3	Chromium	73	mg/kg		*N	P	0.178	1	OPTIMA1	110609E-1
7440-48-4	Cobalt	5.97	mg/kg			P	0.178	1	OPTIMA1	110609E-1
7440-50-8	Copper	308 J	mg/kg		*N	P	3.56	10	OPTIMA1	110909B-2
7439-92-1	Lead	46.5	mg/kg		N	P	2.97	10	OPTIMA1	110909B-2
7439-98-7	Molybdenum	3.87	mg/kg	B		P	2.38	10	OPTIMA1	110909B-2
7440-02-0	Nickel	46.5	mg/kg		*EN	P	0.178	1	OPTIMA1	110609E-1
7782-49-2	Selenium	86.2 J	mg/kg		N	P	5.94	10	OPTIMA1	110909B-2
7440-22-4	Silver	4.96	mg/kg	B		P	1.19	10	OPTIMA1	110909B-2
7440-28-0	Thallium	5.94	mg/kg	U	*N	P	5.94	10	OPTIMA1	110909B-2
7440-62-2	Vanadium	8.92	mg/kg			P	1.19	10	OPTIMA1	110909B-2
7440-66-6	Zinc	1720 J	mg/kg		*	P	3.92	10	OPTIMA1	110909B-2

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12/7/09

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 239856

METHOD TYPE: SW846

SAMPLE ID: 239856003

CLIENT ID: SME-S-003

CONTRACT: ECOL00209

MATRIX: S

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS: 83

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M</u>	<u>MDL</u>	<u>DF</u>	<u>Instrument ID</u>	<u>Analytical Run</u>
7440-36-0	Antimony	7.56	mg/kg			P	0.378	1	OPTIMA1	110609E-1
7440-38-2	Arsenic	33.7	mg/kg	B	*	P	5.73	10	OPTIMA1	110909B-2
7440-39-3	Barium	167	mg/kg		N	P	0.115	1	OPTIMA1	110609E-1
7440-41-7	Beryllium	5.65	mg/kg			P	0.115	1	OPTIMA1	110609E-1
7440-43-9	Cadmium	1.38	mg/kg	B		P	1.15	10	OPTIMA1	110909B-2
7440-47-3	Chromium	89.4	mg/kg		*N	P	0.172	1	OPTIMA1	110609E-1
7440-48-4	Cobalt	6.09	mg/kg			P	0.172	1	OPTIMA1	110609E-1
7440-50-8	Copper	622 J	mg/kg		*N	P	3.44	10	OPTIMA1	110909B-2
7439-92-1	Lead	140	mg/kg		N	P	2.87	10	OPTIMA1	110909B-2
7439-98-7	Molybdenum	13.8	mg/kg			P	2.29	10	OPTIMA1	110909B-2
7440-02-0	Nickel	75.1	mg/kg		*EN	P	0.172	1	OPTIMA1	110609E-1
7782-49-2	Selenium	48.8 J	mg/kg		N	P	5.73	10	OPTIMA1	110909B-2
7440-22-4	Silver	1.57	mg/kg	B		P	1.15	10	OPTIMA1	110909B-2
7440-28-0	Thallium	5.73	mg/kg	U	*N	P	5.73	10	OPTIMA1	110909B-2
7440-62-2	Vanadium	13.5	mg/kg			P	1.15	10	OPTIMA1	110909B-2
7440-66-6	Zinc	5580 J	mg/kg		*	P	3.78	10	OPTIMA1	110909B-2

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METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 239856

METHOD TYPE: SW846

SAMPLE ID: 239856004

CLIENT ID: SME-S-1003

CONTRACT: ECOL00209

MATRIX:S

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS: 83

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M</u>	<u>MDL</u>	<u>DF</u>	<u>Instrument ID</u>	<u>Analytical Run</u>
7440-36-0	Antimony	8.14	mg/kg			P	0.392	1	OPTIMA1	110609E-1
7440-38-2	Arsenic	39.3	mg/kg		*	P	5.94	10	OPTIMA1	110909B-2
7440-39-3	Barium	149	mg/kg		N	P	0.119	1	OPTIMA1	110609E-1
7440-41-7	Beryllium	6.35	mg/kg			P	0.119	1	OPTIMA1	110609E-1
7440-43-9	Cadmium	1.63	mg/kg	B		P	1.19	10	OPTIMA1	110909B-2
7440-47-3	Chromium	85.2	mg/kg		*N	P	0.178	1	OPTIMA1	110609E-1
7440-48-4	Cobalt	7.52	mg/kg			P	0.178	1	OPTIMA1	110609E-1
7440-50-8	Copper	244 J	mg/kg		*N	P	3.56	10	OPTIMA1	110909B-2
7439-92-1	Lead	112	mg/kg		N	P	2.97	10	OPTIMA1	110909B-2
7439-98-7	Molybdenum	15.3	mg/kg			P	2.38	10	OPTIMA1	110909B-2
7440-02-0	Nickel	78.5	mg/kg		*EN	P	0.178	1	OPTIMA1	110609E-1
7782-49-2	Selenium	31.6 J	mg/kg	B	N	P	5.94	10	OPTIMA1	110909B-2
7440-22-4	Silver	1.19	mg/kg	U		P	1.19	10	OPTIMA1	110909B-2
7440-28-0	Thallium	9.89	mg/kg	B	*N	P	5.94	10	OPTIMA1	110909B-2
7440-62-2	Vanadium	15.2	mg/kg			P	1.19	10	OPTIMA1	110909B-2
7440-66-6	Zinc	3610 J	mg/kg		*	P	3.92	10	OPTIMA1	110909B-2

M. J.
12/7/09

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 239856

METHOD TYPE: SW846

SAMPLE ID: 239856005

CLIENT ID: SME-S-004

CONTRACT: ECOL00209

MATRIX: S

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS: 88

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M</u>	<u>MDL</u>	<u>DF</u>	<u>Instrument ID</u>	<u>Analytical Run</u>
7440-36-0	Antimony	31	mg/kg			P	0.375	1	OPTIMA1	110609E-1
7440-38-2	Arsenic	10.8	mg/kg		*	P	0.568	1	OPTIMA1	110609E-1
7440-39-3	Barium	2880	mg/kg		N	P	0.114	1	OPTIMA1	110609E-1
7440-41-7	Beryllium	62.9	mg/kg			P	0.114	1	OPTIMA1	110609E-1
7440-43-9	Cadmium	4.82	mg/kg			P	0.114	1	OPTIMA1	110609E-1
7440-47-3	Chromium	174	mg/kg		*N	P	0.17	1	OPTIMA1	110609E-1
7440-48-4	Cobalt	5.87	mg/kg			P	0.17	1	OPTIMA1	110609E-1
7440-50-8	Copper	2020 J	mg/kg		*N	P	0.341	1	OPTIMA1	110609E-1
7439-92-1	Lead	139	mg/kg		N	P	2.84	10	OPTIMA1	110909B-2
7439-98-7	Molybdenum	5.26	mg/kg			P	0.227	1	OPTIMA1	111709-3
7440-02-0	Nickel	77.8	mg/kg		*EN	P	0.17	1	OPTIMA1	110609E-1
7782-49-2	Selenium	74.5 J	mg/kg		N	P	5.68	10	OPTIMA1	110909B-2
7440-22-4	Silver	10.3	mg/kg			P	0.114	1	OPTIMA1	110609E-1
7440-28-0	Thallium	12	mg/kg	B	*N	P	5.68	10	OPTIMA1	110909B-2
7440-62-2	Vanadium	29.6	mg/kg			P	0.114	1	OPTIMA1	110609E-1
7440-66-6	Zinc	3340 J	mg/kg		*	P	3.75	10	OPTIMA1	110909B-2

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12/7/09

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 239856

METHOD TYPE: SW846

SAMPLE ID: 239856006

CLIENT ID: SME-S-005

CONTRACT: ECOL00209

MATRIX:S

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS: 81

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M</u>	<u>MDL</u>	<u>DF</u>	<u>Instrument ID</u>	<u>Analytical Run</u>
7440-36-0	Antimony	4.24	mg/kg			P	0.403	1	OPTIMA1	110609E-1
7440-38-2	Arsenic	16.3	mg/kg	B	*	P	6.1	10	OPTIMA1	110909B-2
7440-39-3	Barium	41.1	mg/kg		N	P	0.122	1	OPTIMA1	110609E-1
7440-41-7	Beryllium	7.48	mg/kg			P	0.122	1	OPTIMA1	110609E-1
7440-43-9	Cadmium	1.22	mg/kg	U		P	1.22	10	OPTIMA1	110909B-2
7440-47-3	Chromium	36.5	mg/kg		*N	P	0.183	1	OPTIMA1	110609E-1
7440-48-4	Cobalt	15.4	mg/kg			P	0.183	1	OPTIMA1	110609E-1
7440-50-8	Copper	120 J	mg/kg		*N	P	3.66	10	OPTIMA1	110909B-2
7439-92-1	Lead	17.6	mg/kg		N	P	3.05	10	OPTIMA1	110909B-2
7439-98-7	Molybdenum	2.44	mg/kg	U		P	2.44	10	OPTIMA1	110909B-2
7440-02-0	Nickel	33.5	mg/kg		*EN	P	0.183	1	OPTIMA1	110609E-1
7782-49-2	Selenium	68.2 J	mg/kg		N	P	6.1	10	OPTIMA1	110909B-2
7440-22-4	Silver	2.55	mg/kg	B		P	1.22	10	OPTIMA1	110909B-2
7440-28-0	Thallium	6.1	mg/kg	U	*N	P	6.1	10	OPTIMA1	110909B-2
7440-62-2	Vanadium	9.41	mg/kg			P	1.22	10	OPTIMA1	110909B-2
7440-66-6	Zinc	481 J	mg/kg		*	P	4.03	10	OPTIMA1	110909B-2

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12/7/09

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 239856

METHOD TYPE: SW846

SAMPLE ID: 239856007

CLIENT ID: SME-S-006

CONTRACT: ECOL00209

MATRIX: S

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS: 79

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M</u>	<u>MDL</u>	<u>DF</u>	<u>Instrument ID</u>	<u>Analytical Run</u>
7440-36-0	Antimony	18.3	mg/kg			P	0.398	1	OPTIMA1	110609E-1
7440-38-2	Arsenic	9.33	mg/kg		*	P	0.603	1	OPTIMA1	110609E-1
7440-39-3	Barium	432	mg/kg		N	P	0.121	1	OPTIMA1	110609E-1
7440-41-7	Beryllium	6.91	mg/kg			P	0.121	1	OPTIMA1	110609E-1
7440-43-9	Cadmium	4	mg/kg			P	0.121	1	OPTIMA1	110609E-1
7440-47-3	Chromium	203	mg/kg		*N	P	0.181	1	OPTIMA1	110609E-1
7440-48-4	Cobalt	4.63	mg/kg			P	0.181	1	OPTIMA1	110609E-1
7440-50-8	Copper	2270 J	mg/kg		*N	P	0.362	1	OPTIMA1	110609E-1
7439-92-1	Lead	152	mg/kg		N	P	3.01	10	OPTIMA1	110909B-2
7439-98-7	Molybdenum	6.35	mg/kg			P	0.241	1	OPTIMA1	111709-3
7440-02-0	Nickel	105	mg/kg		*EN	P	0.181	1	OPTIMA1	110609E-1
7782-49-2	Selenium	2.07 J	mg/kg	B	N	P	0.603	1	OPTIMA1	110609E-1
7440-22-4	Silver	4.92	mg/kg			P	0.121	1	OPTIMA1	110609E-1
7440-28-0	Thallium	6.03	mg/kg	U	*N	P	6.03	10	OPTIMA1	110909B-2
7440-62-2	Vanadium	34.6	mg/kg			P	0.121	1	OPTIMA1	110609E-1
7440-66-6	Zinc	1930 J	mg/kg		*	P	3.98	10	OPTIMA1	110909B-2

M. J.
12/7/09

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 239856

METHOD TYPE: SW846

SAMPLE ID: 239856008

CLIENT ID: BAG-S-001

CONTRACT: ECOL00209

MATRIX: S

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS: 74

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M</u>	<u>MDL</u>	<u>DF</u>	<u>Instrument ID</u>	<u>Analytical Run</u>
7440-36-0	Antimony	4.8	mg/kg			P	0.437	1	OPTIMA1	110609E-1
7440-38-2	Arsenic	29.2	mg/kg	B	*	P	6.62	10	OPTIMA1	110909B-2
7440-39-3	Barium	354	mg/kg		N	P	0.132	1	OPTIMA1	110609E-1
7440-41-7	Beryllium	18.8	mg/kg			P	0.132	1	OPTIMA1	110609E-1
7440-43-9	Cadmium	1.32	mg/kg	U		P	1.32	10	OPTIMA1	110909B-2
7440-47-3	Chromium	197	mg/kg		*N	P	0.198	1	OPTIMA1	110609E-1
7440-48-4	Cobalt	22.3	mg/kg			P	0.198	1	OPTIMA1	110609E-1
7440-50-8	Copper	364 J	mg/kg		*N	P	3.97	10	OPTIMA1	110909B-2
7439-92-1	Lead	7.19	mg/kg	B	N	P	3.31	10	OPTIMA1	110909B-2
7439-98-7	Molybdenum	64.1	mg/kg			P	2.65	10	OPTIMA1	110909B-2
7440-02-0	Nickel	256	mg/kg		*EN	P	0.198	1	OPTIMA1	110609E-1
7782-49-2	Selenium	72.2 J	mg/kg		N	P	6.62	10	OPTIMA1	110909B-2
7440-22-4	Silver	3.54	mg/kg	B		P	1.32	10	OPTIMA1	110909B-2
7440-28-0	Thallium	6.62	mg/kg	U	*N	P	6.62	10	OPTIMA1	110909B-2
7440-62-2	Vanadium	20.6	mg/kg			P	1.32	10	OPTIMA1	110909B-2
7440-66-6	Zinc	698 J	mg/kg		*	P	4.37	10	OPTIMA1	110909B-2

[Signature]
12/7/09

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 239856

METHOD TYPE: SW846

SAMPLE ID: 239856009

CLIENT ID: BAG-S-002

CONTRACT: ECOL00209

MATRIX: S

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS: 83

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M</u>	<u>MDL</u>	<u>DF</u>	<u>Instrument ID</u>	<u>Analytical Run</u>
7440-36-0	Antimony	5.15	mg/kg			P	0.378	1	OPTIMA1	110609E-1
7440-38-2	Arsenic	24.4	mg/kg	B	*	P	5.73	10	OPTIMA1	110909B-2
7440-39-3	Barium	923	mg/kg		N	P	0.115	1	OPTIMA1	110609E-1
7440-41-7	Beryllium	67.4	mg/kg			P	0.115	1	OPTIMA1	110609E-1
7440-43-9	Cadmium	1.39	mg/kg	B		P	1.15	10	OPTIMA1	110909B-2
7440-47-3	Chromium	58.3	mg/kg		*N	P	0.172	1	OPTIMA1	110609E-1
7440-48-4	Cobalt	5.65	mg/kg			P	0.172	1	OPTIMA1	110609E-1
7440-50-8	Copper	207 J	mg/kg		*N	P	3.44	10	OPTIMA1	110909B-2
7439-92-1	Lead	42.1	mg/kg		N	P	2.86	10	OPTIMA1	110909B-2
7439-98-7	Molybdenum	6.5	mg/kg	B		P	2.29	10	OPTIMA1	110909B-2
7440-02-0	Nickel	41.2	mg/kg		*EN	P	0.172	1	OPTIMA1	110609E-1
7782-49-2	Selenium	81.3 J	mg/kg		N	P	5.73	10	OPTIMA1	110909B-2
7440-22-4	Silver	4.63	mg/kg	B		P	1.15	10	OPTIMA1	110909B-2
7440-28-0	Thallium	10.1	mg/kg	B	*N	P	5.73	10	OPTIMA1	110909B-2
7440-62-2	Vanadium	9.18	mg/kg			P	1.15	10	OPTIMA1	110909B-2
7440-66-6	Zinc	1830 J	mg/kg		*	P	3.78	10	OPTIMA1	110909B-2

[Signature]
12/7/09

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 239856

METHOD TYPE: SW846

SAMPLE ID: 239856010

CLIENT ID: BAG-S-003

CONTRACT: ECOL00209

MATRIX:S

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS: 86

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M</u>	<u>MDL</u>	<u>DF</u>	<u>Instrument ID</u>	<u>Analytical Run</u>
7440-36-0	Antimony	6.37	mg/kg			P	0.382	1	OPTIMA1	110609E-1
7440-38-2	Arsenic	28.2	mg/kg	B	*	P	5.78	10	OPTIMA1	110909B-2
7440-39-3	Barium	700	mg/kg		N	P	0.116	1	OPTIMA1	110609E-1
7440-41-7	Beryllium	33.8	mg/kg			P	0.116	1	OPTIMA1	110609E-1
7440-43-9	Cadmium	3.69	mg/kg	B		P	1.16	10	OPTIMA1	110909B-2
7440-47-3	Chromium	117	mg/kg		*N	P	0.174	1	OPTIMA1	110609E-1
7440-48-4	Cobalt	14.3	mg/kg			P	0.174	1	OPTIMA1	110609E-1
7440-50-8	Copper	798 J	mg/kg		*N	P	3.47	10	OPTIMA1	110909B-2
7439-92-1	Lead	81	mg/kg		N	P	2.89	10	OPTIMA1	110909B-2
7439-98-7	Molybdenum	17.5	mg/kg			P	2.31	10	OPTIMA1	110909B-2
7440-02-0	Nickel	103	mg/kg		*EN	P	0.174	1	OPTIMA1	110609E-1
7782-49-2	Selenium	48.9 J	mg/kg		N	P	5.78	10	OPTIMA1	110909B-2
7440-22-4	Silver	3.44	mg/kg	B		P	1.16	10	OPTIMA1	110909B-2
7440-28-0	Thallium	5.78	mg/kg	U	*N	P	5.78	10	OPTIMA1	110909B-2
7440-62-2	Vanadium	19.9	mg/kg			P	1.16	10	OPTIMA1	110909B-2
7440-66-6	Zinc	4320 J	mg/kg		*	P	3.82	10	OPTIMA1	110909B-2

[Signature]
12/7/09

METALS
-3b-
PREPARATION BLANK SUMMARY

SDG NO. 239856
Contract: ECOL00209
Matrix: SOIL

<u>Sample ID</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Acceptance Window</u>	<u>Conc Qual</u>	<u>M</u>	<u>MDL</u>	<u>RDL</u>
1201960528	Molybdenum	0.19	mg/kg	+/-0.952	U	P	0.19	0.952
	Nickel	0.349	mg/kg	+/-0.476	B	P	0.143	0.476
	Selenium	0.476	mg/kg	+/-2.857	U	P	0.476	2.86
	Silver	0.0952	mg/kg	+/-0.476	U	P	0.0952	0.476
	Thallium	0.476	mg/kg	+/-1.905	U	P	0.476	1.9
	Vanadium	0.0952	mg/kg	+/-0.476	U	P	0.0952	0.476
	Zinc	0.318	mg/kg	+/-0.952	B	P	0.314	0.952
	Antimony	0.531	mg/kg	+/-0.952	B	P	0.314	0.952
	Barium	0.0952	mg/kg	+/-0.476	U	P	0.0952	0.476
	Lead	0.238	mg/kg	+/-0.952	U	P	0.238	0.952
	Copper	0.286	mg/kg	+/-0.952	U	P	0.286	0.952
	Cobalt	0.143	mg/kg	+/-0.476	U	P	0.143	0.476
	Chromium	0.143	mg/kg	+/-0.476	U	P	0.143	0.476
	Cadmium	0.0952	mg/kg	+/-0.476	U	P	0.0952	0.476
	Beryllium	0.0952	mg/kg	+/-0.476	U	P	0.0952	0.476
	Arsenic	0.476	mg/kg	+/-2.857	U	P	0.476	2.86
1201963699	Antimony	0.33	mg/kg	+/-1.0	U	P	0.33	1
	Copper	0.3	mg/kg	+/-1.0	U	P	0.3	1
	Molybdenum	0.2	mg/kg	+/-1.0	U	P	0.2	1
	Zinc	0.33	mg/kg	+/-1.0	U	P	0.33	1
	Vanadium	0.1	mg/kg	+/-0.5	U	P	0.1	0.5
	Thallium	0.5	mg/kg	+/-2.0	U	P	0.5	2
	Silver	0.1	mg/kg	+/-0.5	U	P	0.1	0.5
	Selenium	0.5	mg/kg	+/-3.0	U	P	0.5	3
	Nickel	-0.166	mg/kg	+/-0.5	B	P	0.15	0.5
	Lead	0.25	mg/kg	+/-1.0	U	P	0.25	1
	Cobalt	0.15	mg/kg	+/-0.5	U	P	0.15	0.5
	Arsenic	0.5	mg/kg	+/-3.0	U	P	0.5	3
	Barium	0.1	mg/kg	+/-0.5	U	P	0.1	0.5
	Beryllium	0.1	mg/kg	+/-0.5	U	P	0.1	0.5
	Cadmium	0.1	mg/kg	+/-0.5	U	P	0.1	0.5
	Chromium	0.15	mg/kg	+/-0.5	U	P	0.15	0.5

[Signature]
12/7/09

SW846

Page: 3 of 4

Project #: 002693.2053.012A05

GEL Quote #:

COC Number (1):

PO Number:

GEL Chain of Custody and Analytical Request

GEL Work Order Number: 239850

GEL Laboratories, LLC
2040 Savage Road
Charleston, SC 29407
Phone: (843) 556-8171
Fax: (843) 766-1178

Client Name: ECOLOGY AND ENVIRONMENT, INC. Phone #: _____

Project/Site Name: _____

Address: _____

Fax #: _____

Sample Analysis Requested (Fill in the number of containers for each test)

Sample ID	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hh:mm)	QC Code (a)	Field Filtered (b) Matrix (c)	Sample Matrix (d)	Should this sample be considered:		Total number of containers	Sample Analysis Requested (Fill in the number of containers for each test)					Comments
						Radioactive	TSCA Regulated		Preservative Type (6)	Preservative Type (6)	Preservative Type (6)	Preservative Type (6)	Preservative Type (6)	
BAG-M-1015	10/22/09	1707	FD		P			1	EPA 60108 (Cadmium) X	EPA 8015M (Lead) X	EPA 8260 (Mercury) X	EPA 901.1M (Silver) X	MS/MSD	* for checked mail
SME-S-001	10/22/09	0810	N		SO			2						for requested
SME-S-002	10/23/09	1030	N		SO			3						to check rnc
SME-S-003	10/23/09	1035	N		SO			3						for Thirika
SME-S-1003	10/23/09	1037	PD		SO			3						
SME-S-004	10/22/09	0830	N		SO			1						
SME-S-005	10/23/09	1042	N		SO			3						
SME-S-006	10/23/09	1110	N		SO			3						
BAG-S-001	10/23/09	0700	N		SO			3						
BAG-S-002	10/23/09	1055	N		SO			3						

TAT Requested: Normal Rush: _____ Specify: _____ Fax Results: Yes / No

Circle Deliverables: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Sample Collection Time Zone: Pacific Eastern Central Mountain

Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards
8015M for TPH / Diesel & Motor oil

Chain of Custody Signatures

Relinquished By (Signed) _____ Date _____ Time _____

Received by (Signed) R.M. Helling Date 10/23/09 Time 900

GEL PM: _____

Method of Shipment: _____

Date Shipped: _____

Airbill #: _____

Airbill #: _____

1.) Chain of Custody Number = Client Determined

2.) QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite

3.) Field Filtered: For liquid matrices, indicate with a - Y - for yes the sample was field filtered or - N - for sample was not field filtered.

4.) Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, W=Water, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Filter, U=Urine, P=Food, N=Nest

5.) Sample Analysis Requested: Analytical method requested (i.e. 8260B, 60108/7470A) and number of containers provided for each (i.e. 8260B - 3, 60108/7470A - 1).

6.) Preservative Type: BA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate, If no preservative is added = leave field blank

WHITE = LABORATORY

YELLOW = FILE

PINK = CLIENT

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
TDD Number: TO2-09-09-00-0002	Project Number: 002693.2053.01RA

Laboratory: GEL Laboratories, LLC	Lab Project Number: 239856
Sampling Dates: 10/22/09 & 10/23/09	Sample Matrix: Soil
Analytical Method: VOCs by EPA 8260B (GCMS)	Data Reviewer: M. Song

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song
 Technical QA Reviewer: Howard Edwards
 Project Manager: Dan Haag

Date: 12/7/09
 Date: 12/8/09
 Date: 12/9/09

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	SME-S-001	239856-001
2	SME-S-002	239856-002
3	SME-S-003	239856-003
4	SME-S-1003	239856-004
5	SME-S-006	239856-006
6	SME-S-008	239856-007
7	BAG-S-001	239856-008
8	BAG-S-002	239856-009
9	BAG-S-003	239856-010
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
TDD Number: TO2-09-09-0002	Project Number: 002693.2053.01RA

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- ☒ Included: no problems
- ☐ * Included: problems noted in review
- ☐ O Not Included and/or Not Available
- ☐ NR Not Required
- ☐ RS Provided As Re-submission

Case Narrative:

- ☒ Case Narrative present

Quality Control Summary Package:

- ☒ Data Summary sheets
- ☐ NR Matrix Spike/Spike Duplicate Recoveries
- ☒ Laboratory Control Sample Recoveries
- ☒ Method Blank Summaries
- ☒ GC/MS Tuning and Mass Calibration
- ☒ Initial Calibration Data
- ☒ Continuing Calibration Data
- ☐ * Surrogate Compound Recovery Summary
- ☐ * Internal Standard Area Summary

Sample and Blank Data Package Section

- ☒ Reconstructed Ion Current (RIC) Chromatogram
- ☒ Quantitation Reports
- ☒ Raw and Enhanced Mass Spectra
- ☒ Reference Mass Spectra for Target Compounds
- ☐ NR Mass Spectral Library Search for TICs

Raw QC Data Package Section

- ☒ DFTPP and/or BFB mass spectra and mass listings
- ☒ RIC Chromatogram for Standards, LCS, and MS/MSD
- ☒ Quantitation Reports for Standards, LCS, and MS/MSD
- ☐ NR List of Instrument Detection Limits
- ☒ Chain-of-Custody Records
- ☒ Sample Preparation and Analysis Run Logs

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
TDD Number: TO2-09-09-09-0002	Project Number: 002693.2053.01RA

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	Holding Times	YES
2	GC/MS Tuning Criteria	YES
3	Initial Calibrations	YES
4	Continuing Calibrations	YES
5	Laboratory Control Sample	YES
6	Matrix Spike/Matrix Spike Duplicate	YES
7	Blanks and Background Samples	YES
8	Surrogate Compounds	NO
9	Internal Standards	NO
10	Duplicate Analyses	NO
11	Analyte Identification	YES
12	Analyte Quantitation	YES
13	Overall Assessment of Data	YES
14	Usability of Data	YES

Comments:

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
TDD Number: TO2-09-09-0002	Project Number: 002693.2053.01RA

1. HOLDING TIMES

☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the non-detected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

Water Samples:

EPA 8260B: 14 days (from collection) for analysis.

EPA 8270C: 7 days (from collection) for extraction; 40 days (from extraction) for analysis.

Soil or Other Matrices:

EPA 8260B: 14 days (from collection) for analysis.

EPA 8270C: 14 days (from collection) for extraction; 40 days (from extraction) for analysis.

Comments: Analytical holding time was met.

2. GC/MS INSTRUMENT PERFORMANCE CRITERIA

X	BFB (EPA 8260B) or DFTPP (EPA 8270C) has been run for every 12 hours of sample analysis per instrument.
X	The BFB or DFTPP ion abundance criteria indicated in EPA/540/G-90/004 have been met for each instrument.

Comments: None.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
TDD Number: TO2-09-09-09-0002	Project Number: 002693.2053.01RA

3. INITIAL CALIBRATIONS

☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable

Unless flagged below, a 5-point initial calibration was run. In addition, average Relative Response Factor (RRF), and percent relative Standard Deviation (%RSD) values were within control limits (average RRF ≥ 0.05 ; %RSD ≤ 30). For analytes which exceeded the %RSD control limit, associated detected results are qualified as estimated (J). If the low calibration level was not detected, the non-detected results are qualified (UJ). For analytes which exceeded the RRF control limit, associated detected results are qualified as estimated (J) and the non-detected results are qualified as rejected (R).

Comments: Percent relative standard deviation values of all target analytes were within the control limits.

4. CONTINUING CALIBRATIONS

☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable

Unless flagged below, continuing calibrations were performed at the beginning and at the end of any group of samples and at least every 12 hours. In addition, Percent Difference (%D) values were within the control limit (%D ≤ 25). For analytes which exceeded the %D control limit, associated detected results are qualified as estimated (J). In cases where the %D is very high and indicates a severe loss of instrument sensitivity, the associated non-detected results may be qualified as estimated (UJ) or rejected (R) based on the professional judgement of the reviewer.

Comments: Percent difference values of target analytes were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
TDD Number: TO2-09-09-0002	Project Number: 002693.2053.01RA

5. LABORATORY CONTROL SAMPLE

- ☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: LCS recoveries were within the control limits.

6. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

- ☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ No Matrix Spike/Matrix Spike Duplicates Analyzed

Matrix spike and matrix spike duplicate recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. The RPD between the recoveries is used for a qualitative indication of precision. Spike recovery limits of 80% to 120% are specified in EPA/540/G-90/004. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). At the discretion of the reviewer, other limits may be used only if justification can be provided.

Comments: Sample SME-S-002 was designated for MS and MSD and the recoveries were within the control limits generated by the laboratory.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
TDD Number: TO2-09-09-0002	Project Number: 002693.2053.01RA

7. BLANKS AND BACKGROUND SAMPLES

☒ Acceptable
☐ Detection Limits Adjusted

The following blanks were analyzed:

☒ Method (preparation) Blanks
☐ Field Blanks
☐ Instrument Blanks
☐ Rinsate Blanks
☐ Background Samples
☐ VOA Trip Blanks

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at reporting limit level.

8. SURROGATE COMPOUNDS

☐ Acceptable
☒ Acceptable with qualification
☐ Unacceptable

Surrogate compound recoveries for samples analyzed within a sample group must be within the limits specified in the method. If the surrogate recovery is between 10% and the lower limit, the associated detected results are qualified as estimated (J) and the non-detected results are qualified as estimated (UJ). If the surrogate recovery is <10%, the associated detected results are qualified as estimated (J) and the non-detected results are rejected (R). If the surrogate recovery is above the upper limit, the associated detected results are qualified as estimated (J). Surrogate recoveries which exceeded these limits are noted below and the associated results are qualified on the attached sample report forms.

Comments: Surrogate recoveries except samples SME-S-003 and SME-OS-1003 were within the control limit. The surrogate recoveries were above the upper limit and the detected results were qualified as estimated (J).

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
TDD Number: TO2-09-09-0002	Project Number: 002693.2053.01RA

9. INTERNAL STANDARDS

☐ Acceptable
☒ Acceptable with qualification
☐ Unacceptable

Internal Standard area counts for samples analyzed within a sample group must be within the range of 50% to 200% of the internal standard area for the continuing calibration. If the internal standard area is between 10% and 50% of this value, the associated detected results are qualified as estimated (J) and the non-detected results are qualified as estimated (UJ). If the internal standard area is <10% of the calibration area, both the detected and non-detected results are rejected (R). If the internal standard area is >200% of the calibration area, the associated detected results are qualified as estimated (J). Internal standards which exceeded these limits are noted below and the associated results are qualified on the attached sample report forms.

Comments: The internal standard areas of samples except SME-S-002, SME-S-003, and SME-S-1003 were within the range of 50% to 200% of the internal standard area for the continuing calibration. Since the internal standard area was between 10% and 50%, the detected results qualified as estimated (J) and the non-detected results were qualified as estimated (UJ).

10. DUPLICATE ANALYSES

☐ Acceptable
☒ Acceptable with qualification
☐ Unacceptable
☐ No Duplicates Analyzed

Type of duplicates analyzed:

☒ Field Duplicates
☐ Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the results as estimated (J) for any analyte whose RPD exceeds that specified in the Sampling and Analysis Plan.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
TDD Number: TO2-09-09-0002	Project Number: 002693.2053.01RA

Analyte (ug/kg)	SME-S-003	SME-S-1003	RPD (%)
Acetone	50.7	23.7	73*
Methylene Chloride	7.29	6.26	15
Carbon Disulfide	31.8	11.2	96*
2-Butanone	90.5	47.5	62*
4-Methyl-2-pentanone	21.1	13.6	43*
Toluene	0.688	0.444	43*
2-Hexanone	15.7	10.3	42*
Styrene	3.68	1.92	63*
Xylenes	0.502	<1.21	Not calculated

*: RPD>35%

Comments: SME-S-1003 was a field duplicate of SME-S-003 and the detected results of analytes with RPD greater than 35% were qualified as estimated (J).

11. ANALYTE IDENTIFICATION

Evaluate the ion profiles for the sample analytes and compare them to the library ion profiles provided by the laboratory. Note any identifications which are not sufficiently supported by comparison to known ion profiles.

Comments: Analyte identification was acceptable.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
TDD Number: TO2-09-09-0002	Project Number: 002693.2053.01RA

12. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

EPA 8260B, water samples:

$$\text{ug/L} = \frac{(\text{analyte area})(\text{amount of Internal standard, ng})}{(\text{Internal standard area})(\text{RF})(\text{volume of water purged, mL})}$$

EPA 8260B, soil samples:

$$\text{ug/kg} = \frac{(\text{analyte area})(\text{amount of Internal standard, ng})}{(\text{Internal standard area})(\text{RF})(\text{weight of soil extracted, g})(\text{fraction solids})}$$

EPA 8270C, water samples:

$$\text{ug/L} = \frac{(\text{analyte area})(\text{amount of Internal standard, ng})(\text{total volume of extract, uL})}{(\text{Internal standard area})(\text{RF})(\text{volume of sample extracted, mL})(\text{Injection volume, uL})}$$

EPA 8270C, soil samples:

$$\text{ug/kg} = \frac{(\text{analyte area})(\text{amount of Internal standard, ng})(\text{total volume of extract, uL})}{(\text{Internal standard area})(\text{RF})(\text{weight of sample extracted, g})(\text{fraction solids})(\text{Injection volume, uL})}$$

Comments: Analyte quantitation was acceptable.

Sample SME-S-003

Ethylbenzene: $((48794) (50 \text{ ug/L})) / ((311078) (0.18605)) = 42.15 \text{ ug/kg}$.

$(42.15 \text{ ug/kg}) (100/83.1) = 50.7 \text{ ug/kg}$. Lab reported 50.7 ug/kg.

2-Butanone: $((92007) (50 \text{ ug/L})) / ((311078) (0.19671)) = 75.1774 \text{ ug/kg}$

$(75.179 \text{ ug/kg}) (100/83.1) = 90.47 \text{ ug/kg}$. Lab reported 90.5 ug/kg.

13. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

☐ Acceptable
☒ Acceptable with Qualification
☐ Rejected

Accepted data meet the minimum requirements for the following EPA data category:

☐ ERS Screening
☐ Non-definitive with 10 % Confirmation by Definitive Methodology
☐ Definitive, Comprehensive Statistical Error Determination was performed.
☒ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
TDD Number: TO2-09-09-09-0002	Project Number: 002693.2053.01RA

Comments: Data as reported are valid.

14. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the EPA EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM QUALITY ASSURANCE SAMPLING PLAN FOR SOIL, WATER AND MISCELLANEOUS MATRIX SAMPLING, HALACO BUILDING ASSESSMENT, OXNARD, VENTURA COUNTY, CALIFORNIA, OCTOBER 16, 2009 (QASP).

The following data use objective was indicated in the QASP:

TO ASSIST IN DETERMINING THE PRESENCE OR ABSENCE OF A HAZARDOUS MATERIAL OR SUBSTANCE AT LEVELS ABOVE AN AVAILABLE DETECTION OR QUANTIFICATION LEVEL.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVE.

B. These data meet quality objectives stated in the QASP.

AS INDICATED IN SECTION 2.4 OF THE QASP, THE INVESTIGATION WILL GENERATE BOTH SCREENING AND DEFINITIVE DATA AND TABLE E OF THE QASP OUTLINES THE DATA QUALITY INDICATOR GOALS APPLICABLE TO THE DEFINITIVE DATA QUALITY LEVEL. THE DATA IN THIS PACKAGE MEET THESE REQUIREMENTS.

15. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problem requiring corrective action was found.

Resolution: Not required.

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 239856	Date Collected: 10/23/2009 07:00	Matrix: SOIL
Lab Sample ID: 239856008	Date Received: 10/27/2009 09:00	%Moisture: 25.9
Client ID: BAG-S-001	Client: ECOL007	Project: ECOL00209
Batch ID: 919052	Method: SW846 8260B	SOP Ref: GL-OA-E-038
Run Date: 11/06/2009 22:15	Inst: VOA9.I	Dilution: 1
Prep Date: 11/06/2009 12:51	Analyst: RXY1	Purge Vol: 5 mL
Data File: 9j531.d	Aliquot: 5 g	Final Volume: 5 mL
	Column: RTX-Volatiles	Level: LOW

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-87-3	Chloromethane	J	0.604	ug/kg	0.405	1.35
75-01-4	Vinyl chloride	U	1.35	ug/kg	0.405	1.35
74-83-9	Bromomethane	U	1.35	ug/kg	0.405	1.35
75-00-3	Chloroethane	U	1.35	ug/kg	0.405	1.35
67-64-1	Acetone	J	4.89	ug/kg	2.24	6.75
75-35-4	1,1-Dichloroethylene	U	1.35	ug/kg	0.405	1.35
75-09-2	Methylene chloride	U	6.75	ug/kg	2.70	6.75
75-15-0	Carbon disulfide	U	6.75	ug/kg	1.69	6.75
1634-04-4	tert-Butyl methyl ether	U	1.35	ug/kg	0.405	1.35
156-60-5	trans-1,2-Dichloroethylene	U	1.35	ug/kg	0.405	1.35
108-05-4	Vinyl acetate	U	6.75	ug/kg	1.69	6.75
75-34-3	1,1-Dichloroethane	U	1.35	ug/kg	0.405	1.35
78-93-3	2-Butanone		48.1	ug/kg	2.02	6.75
156-59-2	cis-1,2-Dichloroethylene	U	1.35	ug/kg	0.405	1.35
67-66-3	Chloroform	J	0.873	ug/kg	0.405	1.35
71-55-6	1,1,1-Trichloroethane	U	1.35	ug/kg	0.405	1.35
56-23-5	Carbon tetrachloride	U	1.35	ug/kg	0.405	1.35
107-06-2	1,2-Dichloroethane	U	1.35	ug/kg	0.405	1.35
71-43-2	Benzene	U	1.35	ug/kg	0.405	1.35
79-01-6	Trichloroethylene	U	1.35	ug/kg	0.445	1.35
78-87-5	1,2-Dichloropropane	U	1.35	ug/kg	0.405	1.35
75-27-4	Bromodichloromethane	U	1.35	ug/kg	0.405	1.35
108-10-1	4-Methyl-2-pentanone	U	6.75	ug/kg	1.69	6.75
10061-01-5	cis-1,3-Dichloropropylene	U	1.35	ug/kg	0.405	1.35
108-88-3	Toluene	U	1.35	ug/kg	0.405	1.35
10061-02-6	trans-1,3-Dichloropropylene	U	1.35	ug/kg	0.405	1.35
79-00-5	1,1,2-Trichloroethane	U	1.35	ug/kg	0.405	1.35
591-78-6	2-Hexanone		6.94	ug/kg	2.02	6.75
127-18-4	Tetrachloroethylene	U	1.35	ug/kg	0.405	1.35
124-48-1	Dibromochloromethane	U	1.35	ug/kg	0.405	1.35
108-90-7	Chlorobenzene	U	1.35	ug/kg	0.405	1.35
100-41-4	Ethylbenzene	U	1.35	ug/kg	0.405	1.35
100-42-5	Styrene	U	1.35	ug/kg	0.405	1.35
75-25-2	Bromoform	U	1.35	ug/kg	0.405	1.35
79-34-5	1,1,2,2-Tetrachloroethane	U	1.35	ug/kg	0.405	1.35
1330-20-7	Xylenes (total)		1.56	ug/kg	0.405	1.35

[Signature]
12/7/09

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 239856
Lab Sample ID: 239856009

Date Collected: 10/23/2009 10:55
Date Received: 10/27/2009 09:00
Client: ECOL007
Method: SW846 8260B
Inst: VOA9.1
Analyst: RXY1
Aliquot: 5 g
Column: RTX-Volatiles

Matrix: SOIL
%Moisture: 16.9
Project: ECOL00209
SOP Ref: GL-OA-E-038
Dilution: 1
Purge Vol: 5 mL
Final Volume: 5 mL
Level: LOW

Client ID: BAG-S-002
Batch ID: 919052
Run Date: 11/05/2009 15:55
Prep Date: 11/05/2009 09:43
Data File: 9j418.d

CAS No.	Parname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-87-3	Chloromethane	U	1.20	ug/kg	0.361	1.20
75-01-4	Vinyl chloride	U	1.20	ug/kg	0.361	1.20
74-83-9	Bromomethane	U	1.20	ug/kg	0.361	1.20
75-00-3	Chloroethane	U	1.20	ug/kg	0.361	1.20
67-64-1	Acetone	J	3.96	ug/kg	2.00	6.01
75-35-4	1,1-Dichloroethylene	U	1.20	ug/kg	0.361	1.20
75-09-2	Methylene chloride	U	6.01	ug/kg	2.41	6.01
75-15-0	Carbon disulfide	U	6.01	ug/kg	1.50	6.01
1634-04-4	tert-Butyl methyl ether	U	1.20	ug/kg	0.361	1.20
156-60-5	trans-1,2-Dichloroethylene	U	1.20	ug/kg	0.361	1.20
108-05-4	Vinyl acetate	U	6.01	ug/kg	1.50	6.01
75-34-3	1,1-Dichloroethane	U	1.20	ug/kg	0.361	1.20
78-93-3	2-Butanone	U	6.01	ug/kg	1.80	6.01
156-59-2	cis-1,2-Dichloroethylene	U	1.20	ug/kg	0.361	1.20
67-66-3	Chloroform	U	1.20	ug/kg	0.361	1.20
71-55-6	1,1,1-Trichloroethane	U	1.20	ug/kg	0.361	1.20
56-23-5	Carbon tetrachloride	U	1.20	ug/kg	0.361	1.20
107-06-2	1,2-Dichloroethane	U	1.20	ug/kg	0.361	1.20
71-43-2	Benzene	U	1.20	ug/kg	0.361	1.20
79-01-6	Trichloroethylene	U	1.20	ug/kg	0.397	1.20
78-87-5	1,2-Dichloropropane	U	1.20	ug/kg	0.361	1.20
75-27-4	Bromodichloromethane	U	1.20	ug/kg	0.361	1.20
108-10-1	4-Methyl-2-pentanone	U	6.01	ug/kg	1.50	6.01
10061-01-5	cis-1,3-Dichloropropylene	U	1.20	ug/kg	0.361	1.20
108-88-3	Toluene	U	1.20	ug/kg	0.361	1.20
10061-02-6	trans-1,3-Dichloropropylene	U	1.20	ug/kg	0.361	1.20
79-00-5	1,1,2-Trichloroethane	U	1.20	ug/kg	0.361	1.20
591-78-6	2-Hexanone	U	6.01	ug/kg	1.80	6.01
127-18-4	Tetrachloroethylene	U	1.20	ug/kg	0.361	1.20
124-48-1	Dibromochloromethane	U	1.20	ug/kg	0.361	1.20
108-90-7	Chlorobenzene	U	1.20	ug/kg	0.361	1.20
100-41-4	Ethylbenzene	U	1.20	ug/kg	0.361	1.20
100-42-5	Styrene	U	1.20	ug/kg	0.361	1.20
75-25-2	Bromoform	U	1.20	ug/kg	0.361	1.20
79-34-5	1,1,2,2-Tetrachloroethane	U	1.20	ug/kg	0.361	1.20
1330-20-7	Xylenes (total)	U	1.20	ug/kg	0.361	1.20

[Signature]
12/7/09

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 239856	Date Collected: 10/23/2009 11:00	Matrix: SOIL
Lab Sample ID: 239856010	Date Received: 10/27/2009 09:00	%Moisture: 13.9
	Client: ECOL007	Project: ECOL00209
Client ID: BAG-S-003	Method: SW846 8260B	SOP Ref: GL-OA-E-038
Batch ID: 919052	Inst: VOA9.I	Dilution: 1
Run Date: 11/05/2009 16:23	Analyst: RXY1	Purge Vol: 5 mL
Prep Date: 11/05/2009 09:44	Allquot: 5 g	Final Volume: 5 mL
Data File: 9J419.d	Column: RTX-Volatiles	Level: LOW

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-87-3	Chloromethane	U	1.16	ug/kg	0.348	1.16
75-01-4	Vinyl chloride	U	1.16	ug/kg	0.348	1.16
74-83-9	Bromomethane	U	1.16	ug/kg	0.348	1.16
75-00-3	Chloroethane	U	1.16	ug/kg	0.348	1.16
67-64-1	Acetone	U	5.81	ug/kg	1.93	5.81
75-35-4	1,1-Dichloroethylene	U	1.16	ug/kg	0.348	1.16
75-09-2	Methylene chloride	U	5.81	ug/kg	2.32	5.81
75-15-0	Carbon disulfide	U	5.81	ug/kg	1.45	5.81
1634-04-4	tert-Butyl methyl ether	U	1.16	ug/kg	0.348	1.16
156-60-5	trans-1,2-Dichloroethylene	U	1.16	ug/kg	0.348	1.16
108-05-4	Vinyl acetate	U	5.81	ug/kg	1.45	5.81
75-34-3	1,1-Dichloroethane	U	1.16	ug/kg	0.348	1.16
78-93-3	2-Butanone	U	5.81	ug/kg	1.74	5.81
156-59-2	cis-1,2-Dichloroethylene	U	1.16	ug/kg	0.348	1.16
67-66-3	Chloroform	U	1.16	ug/kg	0.348	1.16
71-55-6	1,1,1-Trichloroethane	U	1.16	ug/kg	0.348	1.16
56-23-5	Carbon tetrachloride	U	1.16	ug/kg	0.348	1.16
107-06-2	1,2-Dichloroethane	U	1.16	ug/kg	0.348	1.16
71-43-2	Benzene	U	1.16	ug/kg	0.348	1.16
79-01-6	Trichloroethylene	U	1.16	ug/kg	0.383	1.16
78-87-5	1,2-Dichloropropane	U	1.16	ug/kg	0.348	1.16
75-27-4	Bromodichloromethane	U	1.16	ug/kg	0.348	1.16
108-10-1	4-Methyl-2-pentanone	U	5.81	ug/kg	1.45	5.81
10061-01-5	cis-1,3-Dichloropropylene	U	1.16	ug/kg	0.348	1.16
108-88-3	Toluene	U	1.16	ug/kg	0.348	1.16
10061-02-6	trans-1,3-Dichloropropylene	U	1.16	ug/kg	0.348	1.16
79-00-5	1,1,2-Trichloroethane	U	1.16	ug/kg	0.348	1.16
591-78-6	2-Hexanone	U	5.81	ug/kg	1.74	5.81
127-18-4	Tetrachloroethylene	U	1.16	ug/kg	0.348	1.16
124-48-1	Dibromochloromethane	U	1.16	ug/kg	0.348	1.16
108-90-7	Chlorobenzene	U	1.16	ug/kg	0.348	1.16
100-41-4	Ethylbenzene	U	1.16	ug/kg	0.348	1.16
100-42-5	Styrene	U	1.16	ug/kg	0.348	1.16
75-25-2	Bromoform	U	1.16	ug/kg	0.348	1.16
79-34-5	1,1,2,2-Tetrachloroethane	U	1.16	ug/kg	0.348	1.16
1330-20-7	Xylenes (total)	U	1.16	ug/kg	0.348	1.16

[Signature]
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Volatile
Certificate of Analysis
Sample Summary

SDG Number: 239856	Date Collected: 10/22/2009 08:10	Matrix: SOIL
Lab Sample ID: 239856001	Date Received: 10/27/2009 09:00	%Moisture: 28.3
	Client: ECOL007	Project: ECOL00209
Client ID: SME-S-001	Method: SW846 8260B	SOP Ref: GL-OA-E-038
Batch ID: 919052	Inst: VOA9.I	Dilution: 1
Run Date: 11/04/2009 18:00	Analyst: RXY1	Purge Vol: 5 mL
Prep Date: 11/04/2009 13:40	Allquot: 5 g	Final Volume: 5 mL
Data File: 9j321.d	Column: RTX-Volatiles	Level: LOW

CAS No.	Parname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-87-3	Chloromethane	U	1.40	ug/kg	0.419	1.40
75-01-4	Vinyl chloride	U	1.40	ug/kg	0.419	1.40
74-83-9	Bromomethane	U	1.40	ug/kg	0.419	1.40
75-00-3	Chloroethane	U	1.40	ug/kg	0.419	1.40
67-64-1	Acetone	J	3.55	ug/kg	2.32	6.98
75-35-4	1,1-Dichloroethylene	U	1.40	ug/kg	0.419	1.40
75-09-2	Methylene chloride	U	6.98	ug/kg	2.79	6.98
75-15-0	Carbon disulfide	U	6.98	ug/kg	1.74	6.98
1634-04-4	tert-Butyl methyl ether	U	1.40	ug/kg	0.419	1.40
156-60-5	trans-1,2-Dichloroethylene	U	1.40	ug/kg	0.419	1.40
108-05-4	Vinyl acetate	U	6.98	ug/kg	1.74	6.98
75-34-3	1,1-Dichloroethane	U	1.40	ug/kg	0.419	1.40
78-93-3	2-Butanone	U	6.98	ug/kg	2.09	6.98
156-59-2	cis-1,2-Dichloroethylene	U	1.40	ug/kg	0.419	1.40
67-66-3	Chloroform	J	0.519	ug/kg	0.419	1.40
71-55-6	1,1,1-Trichloroethane	U	1.40	ug/kg	0.419	1.40
56-23-5	Carbon tetrachloride	U	1.40	ug/kg	0.419	1.40
107-06-2	1,2-Dichloroethane	U	1.40	ug/kg	0.419	1.40
71-43-2	Benzene	U	1.40	ug/kg	0.419	1.40
79-01-6	Trichloroethylene	U	1.40	ug/kg	0.460	1.40
78-87-5	1,2-Dichloropropane	U	1.40	ug/kg	0.419	1.40
75-27-4	Bromodichloromethane	U	1.40	ug/kg	0.419	1.40
108-10-1	4-Methyl-2-pentanone	U	6.98	ug/kg	1.74	6.98
10061-01-5	cis-1,3-Dichloropropylene	U	1.40	ug/kg	0.419	1.40
108-88-3	Toluene	U	1.40	ug/kg	0.419	1.40
10061-02-6	trans-1,3-Dichloropropylene	U	1.40	ug/kg	0.419	1.40
79-00-5	1,1,2-Trichloroethane	U	1.40	ug/kg	0.419	1.40
591-78-6	2-Hexanone	U	6.98	ug/kg	2.09	6.98
127-18-4	Tetrachloroethylene	U	1.40	ug/kg	0.419	1.40
124-48-1	Dibromochloromethane	U	1.40	ug/kg	0.419	1.40
108-90-7	Chlorobenzene	U	1.40	ug/kg	0.419	1.40
100-41-4	Ethylbenzene	U	1.40	ug/kg	0.419	1.40
100-42-5	Styrene	U	1.40	ug/kg	0.419	1.40
75-25-2	Bromoform	U	1.40	ug/kg	0.419	1.40
79-34-5	1,1,2,2-Tetrachloroethane	U	1.40	ug/kg	0.419	1.40
1330-20-7	Xylenes (total)	U	1.40	ug/kg	0.419	1.40

[Signature]
12/7/09

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 239856
Lab Sample ID: 239856002

Client ID: SME-S-002
Batch ID: 919052
Run Date: 11/04/2009 18:28
Prep Date: 11/04/2009 13:41
Data File: 9j322.d

Date Collected: 10/23/2009 10:30
Date Received: 10/27/2009 09:00
Client: ECOL007
Method: SW846 8260B
Inst: VOA9.I
Analyst: RXY1
Aliquot: 5 g
Column: RTX-Volatiles

Matrix: SOIL
%Moisture: 16.5
Project: ECOL00209
SOP Ref: GL-OA-E-038
Dilution: 1
Purge Vol: 5 mL
Final Volume: 5 mL
Level: LOW

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-87-3	Chloromethane	U	1.20	ug/kg	0.359	1.20
75-01-4	Vinyl chloride	U	1.20	ug/kg	0.359	1.20
74-83-9	Bromomethane	U	1.20	ug/kg	0.359	1.20
75-00-3	Chloroethane	U	1.20	ug/kg	0.359	1.20
67-64-1	Acetone	J	4.16	ug/kg	1.99	5.99
75-35-4	1,1-Dichloroethylene	U	1.20	ug/kg	0.359	1.20
75-09-2	Methylene chloride	U	5.99	ug/kg	2.40	5.99
75-15-0	Carbon disulfide	U	5.99	ug/kg	1.50	5.99
1634-04-4	tert-Butyl methyl ether	U	1.20	ug/kg	0.359	1.20
156-60-5	trans-1,2-Dichloroethylene	U	1.20	ug/kg	0.359	1.20
108-05-4	Vinyl acetate	U	5.99	ug/kg	1.50	5.99
75-34-3	1,1-Dichloroethane	U	1.20	ug/kg	0.359	1.20
78-93-3	2-Butanone	J	2.10	ug/kg	1.80	5.99
156-59-2	cis-1,2-Dichloroethylene	U	1.20	ug/kg	0.359	1.20
67-66-3	Chloroform	U	1.20	ug/kg	0.359	1.20
71-55-6	1,1,1-Trichloroethane	U	1.20	ug/kg	0.359	1.20
56-23-5	Carbon tetrachloride	U	1.20	ug/kg	0.359	1.20
107-06-2	1,2-Dichloroethane	U	1.20	ug/kg	0.359	1.20
71-43-2	Benzene	U	1.20	ug/kg	0.359	1.20
79-01-6	Trichloroethylene	U	1.20	ug/kg	0.395	1.20
78-87-5	1,2-Dichloropropane	U	1.20	ug/kg	0.359	1.20
75-27-4	Bromodichloromethane	U	1.20	ug/kg	0.359	1.20
108-10-1	4-Methyl-2-pentanone	U	5.99	ug/kg	1.50	5.99
10061-01-5	cis-1,3-Dichloropropylene	U	1.20	ug/kg	0.359	1.20
108-88-3	Toluene	U	1.20	ug/kg	0.359	1.20
10061-02-6	trans-1,3-Dichloropropylene	U	1.20	ug/kg	0.359	1.20
79-00-5	1,1,2-Trichloroethane	U	1.20	ug/kg	0.359	1.20
591-78-6	2-Hexanone	U	5.99	ug/kg	1.80	5.99
127-18-4	Tetrachloroethylene	U	1.20	ug/kg	0.359	1.20
124-48-1	Dibromochloromethane	U	1.20	ug/kg	0.359	1.20
108-90-7	Chlorobenzene	U	1.20	ug/kg	0.359	1.20
100-41-4	Ethylbenzene	U	1.20	ug/kg	0.359	1.20
100-42-5	Styrene	U	1.20	ug/kg	0.359	1.20
75-25-2	Bromoform	U	1.20	ug/kg	0.359	1.20
79-34-5	1,1,2,2-Tetrachloroethane	U	1.20	ug/kg	0.359	1.20
1330-20-7	Xylenes (total)	U	1.20	ug/kg	0.359	1.20

[Signature]
12/7/09

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 239856
Lab Sample ID: 239856003

Date Collected: 10/23/2009 10:35
Date Received: 10/27/2009 09:00
Client: ECOL007
Method: SW846 8260B
Inst: VOA9.I
Analyst: RXY1
Aliquot: 5 g
Column: RTX-Volatiles

Matrix: SOIL
%Moisture: 16.9
Project: ECOL00209
SOP Ref: GL-OA-E-038
Dilution: 1
Purge Vol: 5 mL
Final Volume: 5 mL
Level: LOW

Client ID: SME-S-003
Batch ID: 919052
Run Date: 11/04/2009 18:55
Prep Date: 11/04/2009 13:44
Data File: 9j323.d

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-87-3	Chloromethane	U	1.20 <i>UJ</i>	ug/kg	0.361	1.20
75-01-4	Vinyl chloride	U	1.20 <i>J</i>	ug/kg	0.361	1.20
74-83-9	Bromomethane	U	1.20 <i>J</i>	ug/kg	0.361	1.20
75-00-3	Chloroethane	U	1.20 <i>J</i>	ug/kg	0.361	1.20
67-64-1	Acetone		50.7 <i>J</i>	ug/kg	2.00	6.02
75-35-4	1,1-Dichloroethylene	U	1.20 <i>UJ</i>	ug/kg	0.361	1.20
75-09-2	Methylene chloride		7.29 <i>J</i>	ug/kg	2.41	6.02
75-15-0	Carbon disulfide		31.8 <i>J</i>	ug/kg	1.50	6.02
1634-04-4	tert-Butyl methyl ether	U	1.20 <i>UJ</i>	ug/kg	0.361	1.20
156-60-5	trans-1,2-Dichloroethylene	U	1.20 <i>J</i>	ug/kg	0.361	1.20
108-05-4	Vinyl acetate	U	6.02 <i>J</i>	ug/kg	1.50	6.02
75-34-3	1,1-Dichloroethane	U	1.20 <i>J</i>	ug/kg	0.361	1.20
78-93-3	2-Butanone		90.5 <i>J</i>	ug/kg	1.81	6.02
156-59-2	cis-1,2-Dichloroethylene	U	1.20 <i>UJ</i>	ug/kg	0.361	1.20
67-66-3	Chloroform	U	1.20 <i>J</i>	ug/kg	0.361	1.20
71-55-6	1,1,1-Trichloroethane	U	1.20 <i>J</i>	ug/kg	0.361	1.20
56-23-5	Carbon tetrachloride	U	1.20 <i>J</i>	ug/kg	0.361	1.20
107-06-2	1,2-Dichloroethane	U	1.20 <i>J</i>	ug/kg	0.361	1.20
71-43-2	Benzene	U	1.20 <i>J</i>	ug/kg	0.361	1.20
79-01-6	Trichloroethylene	U	1.20 <i>J</i>	ug/kg	0.397	1.20
78-87-5	1,2-Dichloropropane	U	1.20 <i>J</i>	ug/kg	0.361	1.20
75-27-4	Bromodichloromethane	U	1.20 <i>J</i>	ug/kg	0.361	1.20
108-10-1	4-Methyl-2-pentanone		21.1 <i>J</i>	ug/kg	1.50	6.02
10061-01-5	cis-1,3-Dichloropropylene	U	1.20 <i>UJ</i>	ug/kg	0.361	1.20
108-88-3	Toluene	J	0.688 <i>J</i>	ug/kg	0.361	1.20
10061-02-6	trans-1,3-Dichloropropylene	U	1.20 <i>UJ</i>	ug/kg	0.361	1.20
79-00-5	1,1,2-Trichloroethane	U	1.20 <i>UJ</i>	ug/kg	0.361	1.20
591-78-6	2-Hexanone		15.7 <i>J</i>	ug/kg	1.81	6.02
127-18-4	Tetrachloroethylene	U	1.20 <i>UJ</i>	ug/kg	0.361	1.20
124-48-1	Dibromochloromethane	U	1.20 <i>J</i>	ug/kg	0.361	1.20
108-90-7	Chlorobenzene	U	1.20 <i>J</i>	ug/kg	0.361	1.20
100-41-4	Ethylbenzene	U	1.20 <i>J</i>	ug/kg	0.361	1.20
100-42-5	Styrene		3.68 <i>J</i>	ug/kg	0.361	1.20
75-25-2	Bromoform	U	1.20 <i>UJ</i>	ug/kg	0.361	1.20
79-34-5	1,1,2,2-Tetrachloroethane	U	1.20 <i>UJ</i>	ug/kg	0.361	1.20
1330-20-7	Xylenes (total)	J	0.502 <i>J</i>	ug/kg	0.361	1.20

[Signature]
12/7/09

Volatile
Certificate of Analysis
Sample Summary

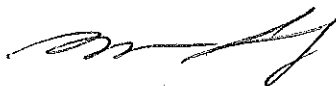
SDG Number: 239856
Lab Sample ID: 239856006

Client ID: SME-S-005
Batch ID: 919052
Run Date: 11/06/2009 21:47
Prep Date: 11/06/2009 12:50
Data File: 9j530.d

Date Collected: 10/23/2009 10:42
Date Received: 10/27/2009 09:00
Client: ECOL007
Method: SW846 8260B
Inst: VOA9.I
Analyst: RXY1
Aliquot: 5 g
Column: RTX-Volatiles

Matrix: SOIL
%Moisture: 18.6
Project: ECOL00209
SOP Ref: GL-OA-E-038
Dilution: 1
Purge Vol: 5 mL
Final Volume: 5 mL
Level: LOW

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-87-3	Chloromethane	U	1.23	ug/kg	0.368	1.23
75-01-4	Vinyl chloride	U	1.23	ug/kg	0.368	1.23
74-83-9	Bromomethane	U	1.23	ug/kg	0.368	1.23
75-00-3	Chloroethane	U	1.23	ug/kg	0.368	1.23
67-64-1	Acetone	J	4.83	ug/kg	2.04	6.14
75-35-4	1,1-Dichloroethylene	U	1.23	ug/kg	0.368	1.23
75-09-2	Methylene chloride	U	6.14	ug/kg	2.46	6.14
75-15-0	Carbon disulfide	U	6.14	ug/kg	1.54	6.14
1634-04-4	tert-Butyl methyl ether	U	1.23	ug/kg	0.368	1.23
156-60-5	trans-1,2-Dichloroethylene	U	1.23	ug/kg	0.368	1.23
108-05-4	Vinyl acetate	U	6.14	ug/kg	1.54	6.14
75-34-3	1,1-Dichloroethane	U	1.23	ug/kg	0.368	1.23
78-93-3	2-Butanone	U	6.14	ug/kg	1.84	6.14
156-59-2	cis-1,2-Dichloroethylene	U	1.23	ug/kg	0.368	1.23
67-66-3	Chloroform	U	1.23	ug/kg	0.368	1.23
71-55-6	1,1,1-Trichloroethane	U	1.23	ug/kg	0.368	1.23
56-23-5	Carbon tetrachloride	U	1.23	ug/kg	0.368	1.23
107-06-2	1,2-Dichloroethane	U	1.23	ug/kg	0.368	1.23
71-43-2	Benzene	U	1.23	ug/kg	0.368	1.23
79-01-6	Trichloroethylene	U	1.23	ug/kg	0.405	1.23
78-87-5	1,2-Dichloropropane	U	1.23	ug/kg	0.368	1.23
75-27-4	Bromodichloromethane	U	1.23	ug/kg	0.368	1.23
108-10-1	4-Methyl-2-pentanone	U	6.14	ug/kg	1.54	6.14
10061-01-5	cis-1,3-Dichloropropylene	U	1.23	ug/kg	0.368	1.23
108-88-3	Toluene	U	1.23	ug/kg	0.368	1.23
10061-02-6	trans-1,3-Dichloropropylene	U	1.23	ug/kg	0.368	1.23
79-00-5	1,1,2-Trichloroethane	U	1.23	ug/kg	0.368	1.23
591-78-6	2-Hexanone	U	6.14	ug/kg	1.84	6.14
127-18-4	Tetrachloroethylene	U	1.23	ug/kg	0.368	1.23
124-48-1	Dibromochloromethane	U	1.23	ug/kg	0.368	1.23
108-90-7	Chlorobenzene	U	1.23	ug/kg	0.368	1.23
100-41-4	Ethylbenzene	U	1.23	ug/kg	0.368	1.23
100-42-5	Styrene	U	1.23	ug/kg	0.368	1.23
75-25-2	Bromoform	U	1.23	ug/kg	0.368	1.23
79-34-5	1,1,2,2-Tetrachloroethane	U	1.23	ug/kg	0.368	1.23
1330-20-7	Xylenes (total)	U	1.23	ug/kg	0.368	1.23


12/7/09


Volatile
Certificate of Analysis
Sample Summary

SDG Number: 239856
Lab Sample ID: 239856007

Date Collected: 10/23/2009 11:10
Date Received: 10/27/2009 09:00
Client: ECOL007
Method: SW846 8260B
Inst: VOA9.I
Analyst: RXY1
Aliquot: 5 g
Column: RTX-Volatiles

Matrix: SOIL
%Moisture: 21
Project: ECOL00209
SOP Ref: GL-OA-E-038
Dilution: 1
Purge Vol: 5 mL
Final Volume: 5 mL
Level: LOW

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-87-3	Chloromethane		3.01	ug/kg	0.380	1.27
75-01-4	Vinyl chloride	U	1.27	ug/kg	0.380	1.27
74-83-9	Bromomethane	U	1.27	ug/kg	0.380	1.27
75-00-3	Chloroethane	U	1.27	ug/kg	0.380	1.27
67-64-1	Acetone	J	5.01	ug/kg	2.10	6.33
75-35-4	1,1-Dichloroethylene	U	1.27	ug/kg	0.380	1.27
75-09-2	Methylene chloride	U	6.33	ug/kg	2.53	6.33
75-15-0	Carbon disulfide	U	6.33	ug/kg	1.58	6.33
1634-04-4	tert-Butyl methyl ether	U	1.27	ug/kg	0.380	1.27
156-60-5	trans-1,2-Dichloroethylene	U	1.27	ug/kg	0.380	1.27
108-05-4	Vinyl acetate	U	6.33	ug/kg	1.58	6.33
75-34-3	1,1-Dichloroethane	U	1.27	ug/kg	0.380	1.27
78-93-3	2-Butanone	U	6.33	ug/kg	1.90	6.33
156-59-2	cis-1,2-Dichloroethylene	U	1.27	ug/kg	0.380	1.27
67-66-3	Chloroform	U	1.27	ug/kg	0.380	1.27
71-55-6	1,1,1-Trichloroethane	U	1.27	ug/kg	0.380	1.27
56-23-5	Carbon tetrachloride	U	1.27	ug/kg	0.380	1.27
107-06-2	1,2-Dichloroethane	U	1.27	ug/kg	0.380	1.27
71-43-2	Benzene	U	1.27	ug/kg	0.380	1.27
79-01-6	Trichloroethylene	U	1.27	ug/kg	0.418	1.27
78-87-5	1,2-Dichloropropane	U	1.27	ug/kg	0.380	1.27
75-27-4	Bromodichloromethane	U	1.27	ug/kg	0.380	1.27
108-10-1	4-Methyl-2-pentanone	U	6.33	ug/kg	1.58	6.33
10061-01-5	cis-1,3-Dichloropropylene	U	1.27	ug/kg	0.380	1.27
108-88-3	Toluene	U	1.27	ug/kg	0.380	1.27
10061-02-6	trans-1,3-Dichloropropylene	U	1.27	ug/kg	0.380	1.27
79-00-5	1,1,2-Trichloroethane	U	1.27	ug/kg	0.380	1.27
591-78-6	2-Hexanone	U	6.33	ug/kg	1.90	6.33
127-18-4	Tetrachloroethylene	U	1.27	ug/kg	0.380	1.27
124-48-1	Dibromochloromethane	U	1.27	ug/kg	0.380	1.27
108-90-7	Chlorobenzene	U	1.27	ug/kg	0.380	1.27
100-41-4	Ethylbenzene	U	1.27	ug/kg	0.380	1.27
100-42-5	Styrene	U	1.27	ug/kg	0.380	1.27
75-25-2	Bromoform	U	1.27	ug/kg	0.380	1.27
79-34-5	1,1,2,2-Tetrachloroethane	U	1.27	ug/kg	0.380	1.27
1330-20-7	Xylenes (total)	U	1.27	ug/kg	0.380	1.27


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Volatile
Certificate of Analysis
Sample Summary

SDG Number: 239856
Lab Sample ID: 239856004

Client ID: SME-S-1003
Batch ID: 919052
Run Date: 11/04/2009 19:23
Prep Date: 11/04/2009 13:45
Data File: 9J324.d

Date Collected: 10/23/2009 10:37
Date Received: 10/27/2009 09:00
Client: ECOL007
Method: SW846 8260B
Inst: VOA9.I
Analyst: RXY1
Aliquot: 5 g
Column: RTX-Volatiles

Matrix: SOIL
%Moisture: 17.1
Project: ECOL00209
SOP Ref: GL-OA-E-038
Dilution: 1
Purge Vol: 5 mL
Final Volume: 5 mL
Level: LOW

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-87-3	Chloromethane	U	1.21 <i>UJ</i>	ug/kg	0.362	1.21
75-01-4	Vinyl chloride	U	1.21 <i>↓</i>	ug/kg	0.362	1.21
74-83-9	Bromomethane	U	1.21 <i>↓</i>	ug/kg	0.362	1.21
75-00-3	Chloroethane	U	1.21 <i>↓</i>	ug/kg	0.362	1.21
67-64-1	Acetone		23.7 <i>J</i>	ug/kg	2.00	6.03
75-35-4	1,1-Dichloroethylene	U	1.21 <i>UJ</i>	ug/kg	0.362	1.21
75-09-2	Methylene chloride		6.26 <i>J</i>	ug/kg	2.41	6.03
75-15-0	Carbon disulfide		11.2 <i>J</i>	ug/kg	1.51	6.03
1634-04-4	tert-Butyl methyl ether	U	1.21 <i>UJ</i>	ug/kg	0.362	1.21
156-60-5	trans-1,2-Dichloroethylene	U	1.21 <i>↓</i>	ug/kg	0.362	1.21
108-05-4	Vinyl acetate	U	6.03 <i>↓</i>	ug/kg	1.51	6.03
75-34-3	1,1-Dichloroethane	U	1.21 <i>↓</i>	ug/kg	0.362	1.21
78-93-3	2-Butanone		47.5 <i>J</i>	ug/kg	1.81	6.03
156-59-2	cis-1,2-Dichloroethylene	U	1.21 <i>UJ</i>	ug/kg	0.362	1.21
67-66-3	Chloroform	U	1.21 <i>↓</i>	ug/kg	0.362	1.21
71-55-6	1,1,1-Trichloroethane	U	1.21 <i>↓</i>	ug/kg	0.362	1.21
56-23-5	Carbon tetrachloride	U	1.21 <i>↓</i>	ug/kg	0.362	1.21
107-06-2	1,2-Dichloroethane	U	1.21 <i>↓</i>	ug/kg	0.362	1.21
71-43-2	Benzene	U	1.21 <i>↓</i>	ug/kg	0.362	1.21
79-01-6	Trichloroethylene	U	1.21 <i>↓</i>	ug/kg	0.398	1.21
78-87-5	1,2-Dichloropropane	U	1.21 <i>↓</i>	ug/kg	0.362	1.21
75-27-4	Bromodichloromethane	U	1.21 <i>↓</i>	ug/kg	0.362	1.21
108-10-1	4-Methyl-2-pentanone		13.6 <i>J</i>	ug/kg	1.51	6.03
10061-01-5	cis-1,3-Dichloropropylene	U	1.21 <i>UJ</i>	ug/kg	0.362	1.21
108-88-3	Toluene	J	0.444 <i>J</i>	ug/kg	0.362	1.21
10061-02-6	trans-1,3-Dichloropropylene	U	1.21 <i>UJ</i>	ug/kg	0.362	1.21
79-00-5	1,1,2-Trichloroethane	U	1.21 <i>↓</i>	ug/kg	0.362	1.21
591-78-6	2-Hexanone		10.3 <i>J</i>	ug/kg	1.81	6.03
127-18-4	Tetrachloroethylene	U	1.21 <i>UJ</i>	ug/kg	0.362	1.21
124-48-1	Dibromochloromethane	U	1.21 <i>↓</i>	ug/kg	0.362	1.21
108-90-7	Chlorobenzene	U	1.21 <i>↓</i>	ug/kg	0.362	1.21
100-41-4	Ethylbenzene	U	1.21 <i>↓</i>	ug/kg	0.362	1.21
100-42-5	Styrene		1.92 <i>J</i>	ug/kg	0.362	1.21
75-25-2	Bromoform	U	1.21 <i>UJ</i>	ug/kg	0.362	1.21
79-34-5	1,1,2,2-Tetrachloroethane	U	1.21 <i>↓</i>	ug/kg	0.362	1.21
1330-20-7	Xylenes (total)	U	1.21 <i>↓</i>	ug/kg	0.362	1.21

[Signature]
12/7/09


Volatile
Certificate of Analysis
Sample Summary

SDG Number: 239856
Lab Sample ID: 1201963447
Client Sample: QC for batch 919051
Client ID: MB for batch 919051
Batch ID: 919052
Run Date: 11/04/2009 12:27
Prep Date: 11/04/2009 09:01
Data File: 9j309B.d

Client: ECOL007
Method: SW846 8260B
Inst: VOA9J
Analyst: RXY1
Aliquot: 5 g
Column: RTX-Volatiles

Matrix: SOIL
Project: QC
SOP Ref: GL-OA-E-038
Dilution: 1
Purge Vol: 5 mL
Final Volume: 5 mL
Level: LOW

CAS No.	Parname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-87-3	Chloromethane	U	1.00	ug/kg	0.300	1.00
75-01-4	Vinyl chloride	U	1.00	ug/kg	0.300	1.00
74-83-9	Bromomethane	U	1.00	ug/kg	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/kg	0.300	1.00
67-64-1	Acetone	U	5.00	ug/kg	1.66	5.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/kg	0.300	1.00
75-09-2	Methylene chloride	U	5.00	ug/kg	2.00	5.00
75-15-0	Carbon disulfide	U	5.00	ug/kg	1.25	5.00
1634-04-4	tert-Butyl methyl ether	U	1.00	ug/kg	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene	U	1.00	ug/kg	0.300	1.00
108-05-4	Vinyl acetate	U	5.00	ug/kg	1.25	5.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/kg	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/kg	1.50	5.00
156-59-2	cis-1,2-Dichloroethylene	U	1.00	ug/kg	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/kg	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/kg	0.300	1.00
56-23-5	Carbon tetrachloride	U	1.00	ug/kg	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/kg	0.300	1.00
71-43-2	Benzene	U	1.00	ug/kg	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/kg	0.330	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/kg	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/kg	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/kg	1.25	5.00
10061-01-5	cis-1,3-Dichloropropylene	U	1.00	ug/kg	0.300	1.00
108-88-3	Toluene	U	1.00	ug/kg	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	U	1.00	ug/kg	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/kg	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/kg	1.50	5.00
127-18-4	Tetrachloroethylene	U	1.00	ug/kg	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/kg	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/kg	0.300	1.00
100-41-4	Ethylbenzene	U	1.00	ug/kg	0.300	1.00
100-42-5	Styrene	U	1.00	ug/kg	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/kg	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/kg	0.300	1.00
1330-20-7	Xylenes (total)	U	1.00	ug/kg	0.300	1.00


12/7/09

20071055866 (only)

GEL Chain of Custody and Analytical Request

GEL Laboratories, LLC
2040 Savage Road
Charleston, SC 29407
Phone: (843) 556-8171
Fax: (843) 766-1178

Page: 3 of 4
Project #: 002693.2053.012405
GEL Quote #:
COC Number (1):
PO Number:

GEL Work Order Number: 239850
Client Name: ECOLOGY AND ENVIRONMENT, INC. Phone #:
Project/Site Name:
Address:
Fax #:

Send Results To: MSong@ENV.com

Sample ID	Date Collected (mm-dd-yy)	Time Collected (Military) (hh:mm)	QC Code (a)	Field Filtered (b)	Sample Matrix (c)	Should this sample be considered:		Total number of containers	Sample Analysis Requested (2) (Fill in the number of containers for each test)				Preservative Type (6)	Comments	
						Radioactive	TSCA Regulated		MS/MSD	MS/MSD	MS/MSD	MS/MSD			
BAG-M-1015	10/22/07	1707	FD		P			1							
SME-S-001	10/22/07	0310	N		SO			2							
SME-S-002	10/23/07	1030	N		SO			3							
SME-S-003	10/23/07	1035	N		SO			3							
SME-S-1003	10/23/07	1037	PD		SO			3							
SME-S-004	10/22/07	0830	N		SO			1							
SME-S-005	10/23/07	1042	N		SO			3							
SME-S-006	10/23/07	1110	N		SO			3							
BAG-S-001	10/23/07	0700	N		SO			3							
BAG-S-002	10/23/07	1055	N		SO			3							

TAT Requested: Normal Rush: Specify: (Subject to Surcharges) Fax Results: Yes / No Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards
8015M for TPH / Diesel & Motor Oil

Chain of Custody Signatures

Relinquished By (Signed)	Date	Received by (Signed)	Date	Time
<u>[Signature]</u>	10/26/07	<u>R.M. Walling</u>	10/27/07	900

GEL PM:
Method of Shipment:
Date Shipped:
Airbill #:
Airbill #:

Sample Shipping and Delivery Details

Sample Collection Time Zone: Eastern Central Mountain Pacific Other

For Lab Receiving Use Only

Custody Seal Intact? YES
Cooler Temp: 5 C

Chain of Custody Number = Client Determined

QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite

Field Filtered: For liquid matrices, indicate with a -Y- for yes the sample was field filtered or -N- for sample was not field filtered.

Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W=Water, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, R=Residue, N=Nail

Sample Analysis Requested: Analytical method requested (i.e. 8260B, 6010B/740A) and number of containers provided for each (i.e. 8260B - 3, 6010B/740A - 1).

Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hxane, ST = Sodium Thiosulfate, If no preservative is added = leave field blank

WHITE = LABORATORY YELLOW = FIELD PINK = CLIENT

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, CA
TDD Number: TO2-09-09-09-0002	Project Number: 002693.2053.01RA
Laboratory: GEL Laboratories, LLC	Lab Project Number: 239856
Sampling Dates: 10/22/09 & 10/23/09	Sample Matrix: Soil
Analytical Method: TPH as Diesel by EPA 8015M	Data Reviewer: M. Song

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song
 Technical QA Reviewer: Howard Edwards
 Project Manager: Dan Haag

Date: 12/7/09
 Date: 12-08-09
 Date: 12/7/09

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	SME-S-001	239856-001
2	SME-S-002	239856-002
3	SME-S-003	239856-003
4	SME-S-1003	239856-004
5	SME-S-005	239856-006
6	SME-S-006	239856-007
7	BAG-S-001	239856-008
8	BAG-S-002	239856-009
9	BAG-S-003	239856-010
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, CA
TDD Number: TO2-09-09-0002	Project Number: 002693.2053.01RA

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- ☒ Included: no problems
- ☐ * Included: problems noted in review
- ☐ O Not Included and/or Not Available
- ☐ NR Not Required
- ☐ RS Provided As Re-submission

Case Narrative:

- ☒ Case Narrative present

Quality Control Summary Package:

- ☒ Data Summary sheets
- ☐ * Matrix Spike/Spike Duplicate Recoveries
- ☒ Laboratory Control Sample Recoveries
- ☒ Method Blank Summaries
- ☒ Initial Calibration Data
- ☒ Continuing Calibration Data
- ☐ * Surrogate Compound Recovery Summary
- ☐ NR Internal Standard Area Summary

Sample and Blank Data Package Section

- ☒ Chromatograms
- ☒ Quantitation Reports

Raw QC Data Package Section

- ☒ Quantitation Reports for Standards, LCS, and MS/MSD
- ☒ List of Instrument Detection Limits
- ☒ Chain-of-Custody Records
- ☒ Sample Preparation and Analysis Run Logs

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, CA
TDD Number: TO2-09-09-09-0002	Project Number: 002693.2053.01RA

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	Holding Times	YES
2	Instrument Performance Criteria	YES
3	Initial Calibrations	YES
4	Continuing Calibrations	YES
5	Laboratory Control Sample	YES
6	Matrix Spike/Matrix Spike Duplicate	YES
7	Blanks and Background Samples	YES
8	Surrogate Compounds	YES
9	Internal Standards	N/A
10	Duplicate Analyses	YES
11	Analyte Identification	YES
12	Analyte Quantitation	YES
13	Overall Assessment of Data	YES
14	Usability of Data	YES

Comments: N/A: Not Applicable

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, CA
TDD Number: TO2-09-09-09-0002	Project Number: 002693.2053.01RA

1. HOLDING TIMES

☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

Water Samples:

Purgeable analyses: 14 days (from collection) to analysis.

Extractable analyses: 7 days (from collection) to extraction; 40 days (from extraction) to analysis.

Soil or Other Matrices:

Purgeable analyses: 14 days (from collection) to analysis.

Extractable analyses: 14 days (from collection) to extraction; 40 days (from extraction) to analysis.

Comments: Analytical holding time was met.

2. INSTRUMENT PERFORMANCE CRITERIA

X	Raw data has been checked to verify that there is adequate resolution (>25%) between peaks of the standard compounds.
X	Raw data has been checked to verify that retention time windows are reported and that all standard compounds are within the windows.

Comments:

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, CA
TDD Number: TO2-09-09-09-0002	Project Number: 002693.2053.01RA

3. INITIAL CALIBRATIONS

☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable

Unless flagged below, a 5-point initial calibration was run. In addition, average Relative Response Factor (RRF), and percent relative Standard Deviation (%RSD) values were within control limits (%RSD \leq 20). For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the low calibration level was not detected, the non-detected results are qualified (UJ).

Comments: TPH as diesel standards were used and %RSD values were within the control limit.

4. CONTINUING CALIBRATIONS

☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable

Unless flagged below, continuing calibrations were performed at the beginning and at the end of any group of samples and at least every 12 hours. In addition, Relative Response Factors (RRF), and Percent Difference (%D) values were within control limits (%D \leq 15). For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the %D is very high and indicates a severe loss of instrument sensitivity, the associated non-detected results may be qualified as estimated (UJ) or rejected (R) based on the professional judgment of the reviewer.

Comments: Diesel standards were analyzed and percent difference values were within the control limit.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, CA
TDD Number: TO2-09-09-09-0002	Project Number: 002693.2053.01RA

5. LABORATORY CONTROL SAMPLE

- ☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: LCS recovery was within the control limit.

6. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

- ☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ No Matrix Spike/Matrix Spike Duplicates Analyzed

Matrix spike and matrix spike duplicate recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. The RPD between the recoveries is used for a qualitative indication of precision. Spike recovery limits of 80% to 120% are specified in EPA/540/G-90/004. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). At the discretion of the reviewer, other limits may be used only if justification can be provided.

Comments: Sample SME-S-002 was designated for MS/MSD analysis and the recoveries were outside of control limits. Qualification was not required since the amount of diesel present in the parent sample was greater than 4X the amount spiked.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, CA
TDD Number: TO2-09-09-09-0002	Project Number: 002693.2053.01RA

7. BLANKS AND BACKGROUND SAMPLES

☒ Acceptable
☐ Detection Limits Adjusted

The following blanks were analyzed:

☒ Method (preparation) Blanks
☐ Field Blanks
☐ Instrument Blanks
☐ Rinsate Blanks
☐ Background Samples
☐ VOA Trip Blanks

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at reporting limit level.

8. SURROGATE COMPOUNDS

☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ No surrogates analyzed

Surrogate compound recoveries for samples analyzed within a sample group must be within the limits specified in the method. If the surrogate recovery is between 10% and the lower limit, the associated detected results are qualified as estimated (J) and the non-detected results are qualified as estimated (UJ). If the surrogate recovery is <10%, the associated detected results are qualified as estimated (J) and the non-detected results are rejected (R). If the surrogate recovery is above the upper limit, the associated detected results are qualified as estimated (J). Surrogate recoveries which exceeded these limits are noted below and the associated results are qualified on the attached sample report forms. If there are no limits specified in the method, laboratory limits based on historical performance may be used at the discretion of the reviewer.

Comments: All surrogate recoveries except SME-S-003 and SME-S-1003 were within the control limits. Qualification was not necessary since the surrogates were diluted out due to dilution.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, CA
TDD Number: TO2-09-09-09-0002	Project Number: 002693.2053.01RA

9. INTERNAL STANDARDS

- ☐ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☒ No internal standards analyzed

Internal Standard area counts for samples analyzed within a sample group must be within the range of 50% to 200% of the internal standard area for the continuing calibration. If the internal standard area is between 10% and 50% of this value, the associated detected results are qualified as estimated (J) and the nondetected results are qualified as estimated (UJ). If the internal standard area is <10% of the calibration area, both the detected and nondetected results are rejected (R). If the internal standard area is >200% of the calibration area, the associated detected results are qualified as estimated (J). Internal standards which exceeded these limits are noted below and the associated results are qualified on the attached sample report forms.

Comments:

10. DUPLICATE ANALYSES

- ☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ No Duplicates Analyzed

Type of duplicates analyzed:

- ☒ Field Duplicates
☐ Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the results as estimated (J) for any analyte whose RPD exceeds that specified in the Sampling and Analysis Plan.

$RPD = \frac{2(Value\ 1 - Value\ 2)}{Value\ 1 + Value\ 2} \times 100\%$

Comments:	<u>SME-S-003</u>	<u>SME-S-1003</u>	<u>RPD (%)</u>
TPH as Diesel, mg/kg	12500	11500	8

Sample SME-S-1003 was a field duplicate of SME-S-003 and RPD was less than 35%.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, CA
TDD Number: TO2-09-09-09-0002	Project Number: 002693.2053.01RA

11. ANALYTE IDENTIFICATION

Verify that positive results have been confirmed on a dissimilar second column, that the sample chromatograms agree with the correct daily standard chromatograms, and that the retention time windows match.

Comments: Samples SME-S-002, SME-S-003, SME-S1003, SME-S-005, BAG-S-002, & BAG-S-003 contained atypical diesel pattern and hydrocarbons heavier than diesel.

12. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Purgeable analyses, water samples:

$$\text{ug/L} = \frac{(\text{analyte area})(\text{amount of external standard, ng})}{(\text{external standard area})(\text{volume of water purged, mL})}$$

Purgeable analyses, soil samples:

$$\text{ug/kg} = \frac{(\text{analyte area})(\text{amount of external standard, ng})}{(\text{external standard area})(\text{weight of soil extracted, g})(\text{fraction solids})}$$

Extractable analyses, water samples:

$$\text{ug/L} = \frac{(\text{analyte area})(\text{amount of external standard, ng})(\text{total volume of extract, uL})}{(\text{external standard area})(\text{volume of sample extracted, mL})(\text{injection volume, uL})}$$

Extractable analyses, soil samples:

$$\text{ug/kg} = \frac{(\text{analyte area})(\text{amount of external standard, ng})(\text{total volume of extract, uL})}{(\text{external standard area})(\text{weight of sample extracted, g})(\text{fraction solids})(\text{injection volume, uL})}$$

Comments: Analyte quantitation was acceptable.

SME-S-002

Diesel: $(9580762/14703) = 651.6195 \text{ mg/kg}$.

$(651.6195 \text{ mg/kg}) (10) (1/30.06) (100/83.5) = 259.6 \text{ mg/kg}$. Lab reported 260 mg/kg.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, CA
TDD Number: TO2-09-09-09-0002	Project Number: 002693.2053.01RA

13. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

☒ Acceptable
☐ Acceptable with Qualification
☐ Rejected

Accepted data meet the minimum requirements for the following EPA data category:

☐ ERS Screening
☐ Non-definitive with 10 % Conformation by Definitive Methodology
☐ Definitive, Comprehensive Statistical Error Determination was performed.
☒ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, CA
TDD Number: TO2-09-09-09-0002	Project Number: 002693.2053.01RA

14. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the EPA EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM QUALITY ASSURANCE SAMPLING PLAN FOR SOIL, WATER AND MISCELLANEOUS MATRIX SAMPLING, HALACO BUILDING ASSESSMENT, OXNARD, VENTURA COUNTY, CALIFORNIA, OCTOBER 16, 2009 (QASP).

The following data use objective was indicated in the QASP:

TO ASSIST IN DETERMINING THE PRESENCE OR ABSENCE OF A HAZARDOUS MATERIAL OR SUBSTANCE AT LEVELS ABOVE AN AVAILABLE DETECTION OR QUANTIFICATION LEVEL.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVE.

B. These data meet quality objectives stated in the QASP.

AS INDICATED IN SECTION 2.4 OF THE QASP, THE INVESTIGATION WILL GENERATE BOTH SCREENING AND DEFINITIVE DATA AND TABLE E OF THE QASP OUTLINES THE DATA QUALITY INDICATOR GOALS APPLICABLE TO THE DEFINITIVE DATA QUALITY LEVEL. THE DATA IN THIS PACKAGE MEET THESE REQUIREMENTS.

15. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problem requiring corrective action was found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.

Flame Ionization Detector
Certificate of Analysis
Sample SummarySDG Number: 239856
Lab Sample ID: 239856001Client ID: SME-S-001
Batch ID: 918539
Run Date: 11/05/2009 13:14
Prep Date: 11/03/2009 19:48
Data File: 039f3901.dDate Collected: 10/22/2009 08:10
Date Received: 10/27/2009 09:00
Client: ECOL007
Method: SW846 8015A/B SYOC
Inst: FID7.I
Analyst: KXR2
Aliquot: 30.12 g
Column: DB-SMSMatrix: SOIL
%Moisture: 28.3
Project: ECOL00209
SOP Ref: GL-OA-E-003
Dilution: 1
Inj. Vol: 1 uL
Final Volume: 1 mL
Level: LOW

CAS No.	Paramname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
DRO	Diesel Range Organics	BJ	6.17	mg/kg	3.01	9.27


12/7/09

Flame Ionization Detector

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Certificate of Analysis

Sample Summary

SDG Number: 239856

Lab Sample ID: 239856002

Client ID: SME-S-002

Batch ID: 918539

Run Date: 11/05/2009 18:09

Prep Date: 11/03/2009 19:48

Data File: 04714701.d

Date Collected: 10/23/2009 10:30

Date Received: 10/27/2009 09:00

Client: ECOL007

Method: SW846 8015A/B SVOC

Inst: FID7.I

Analyst: KXR2

Aliquot: 30.06 g

Column: DB-5MS

Matrix: SOIL

%Moisture: 16.5

Project: ECOL00209

SOP Ref: GL-OA-E-003

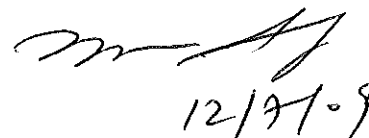
Dilution: 10

Inj. Vol: 1 uL

Final Volume: 1 mL

Level: LOW

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
DRO	Diesel Range Organics	B	260	mg/kg	25.9	79.7


12/17/09

Flame Ionization Detector
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: 239856

Lab Sample ID: 239856003

Client ID: SME-S-003

Batch ID: 918539

Run Date: 11/05/2009 20:01

Prep Date: 11/03/2009 19:48

Data File: 050f5001.d

Date Collected: 10/23/2009 10:35

Date Received: 10/27/2009 09:00

Client: ECOL007

Method: SW846 8015A/B SVOC

Inst: FID7.1

Analyst: KXR2

Aliquot: 30.02 g

Column: DB-SMS

Matrix: SOIL

%Moisture: 16.9

Project: ECOL00209

SOP Ref: GL-OA-E-003


Dilution: 500

Inj. Vol: 1 uL

Final Volume: 1 mL

Level: LOW

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
DRO	Diesel Range Organics	B	12500	mg/kg	1300	4010


12/7/09

Flame Ionization Detector

Page 1 of 1

Certificate of Analysis

Sample Summary

SDG Number: 239856

Lab Sample ID: 239856004

Client ID: SME-S-1003

Batch ID: 918539

Run Date: 11/06/2009 10:11

Prep Date: 11/03/2009 19:48

Data File: 00510501.d

Date Collected: 10/23/2009 10:37

Date Received: 10/27/2009 09:00

Client: ECOL007

Method: SW846 8015A/B SVOC

Inst: FID7.I

Analyst: JMB3

Aliquot: 30.04 g

Column: DB-5MS

Matrix: SOIL

%Moisture: 17.1

Project: ECOL00209

SOP Ref: GL-OA-E-003

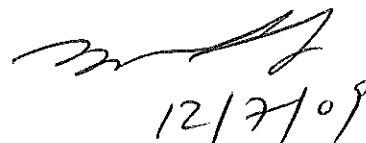
Dilution: 500

Inj. Vol: 1 uL

Final Volume: 1 mL

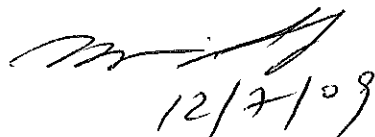
Level: LOW

CAS No.	Paramname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
DRO	Diesel Range Organics	B	11500	mg/kg	1310	4020


12/7/09

Flame Ionization Detector
Certificate of Analysis
Sample SummarySDG Number: 239856
Lab Sample ID: 239856006Client ID: SME-S-005
Batch ID: 918539
Run Date: 11/06/2009 10:48
Prep Date: 11/03/2009 19:48
Data File: 006f0601.dDate Collected: 10/23/2009 10:42
Date Received: 10/27/2009 09:00
Client: ECOL007
Method: SW846 8015A/B SVOC
Inst: FID7.1
Analyst: JMB3
Aliquot: 30.18 g
Column: DB-5MSMatrix: SOIL
%Moisture: 18.6
Project: ECOL00209
SOP Ref: GL-OA-E-003
Dilution: 5
Inj. Vol: 1 uL
Final Volume: 1 mL
Level: LOW

CAS No.	Paramname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
DRO	Diesel Range Organics	B	205	mg/kg	13.2	40.7



12/7/09

Flame Ionization Detector
Certificate of Analysis
Sample Summary

Page 1 of 1


SDG Number:	239856	Date Collected:	10/23/2009 11:10	Matrix:	SOIL
Lab Sample ID:	239856007	Date Received:	10/27/2009 09:00	%Moisture:	21
Client ID:	SME-S-006	Client:	ECOL007	Project:	ECOL00209
Batch ID:	918539	Method:	SW846 8015A/B SVOC	SOP Ref:	GL-OA-E-003
Run Date:	11/06/2009 11:25	Inst:	FID7.J	Dilution:	1
Prep Date:	11/03/2009 19:48	Analyst:	JMB3	Inj. Vol:	1 uL
Data File:	00710701.d	Aliquot:	30.09 g	Final Volume:	1 mL
		Column:	DB-5MS	Level:	LOW

CAS No.	Paramname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
DRO	Diesel Range Organics	B	10.2	mg/kg	2.73	8.41


12/7/09

Flame Ionization Detector
Certificate of Analysis
Sample SummarySDG Number: 239856
Lab Sample ID: 239856008Client ID: BAG-S-001
Batch ID: 918539
Run Date: 11/05/2009 23:42
Prep Date: 11/03/2009 19:48
Data File: 056f5601.dDate Collected: 10/23/2009 07:00
Date Received: 10/27/2009 09:00
Client: ECOL007
Method: SW846 8015A/B SVOC
Inst: FID7.I
Analyst: KXR2
Aliquot: 30.11 g
Column: DB-5MSMatrix: SOIL
%Moisture: 25.9
Project: ECOL00209
SOP Ref: GL-OA-E-003
Dilution: 1
Inj. Vol: 1 uL
Final Volume: 1 mL
Level: LOW

CAS No.	Paramname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
DRO	Diesel Range Organics	B	36.7	mg/kg	2.91	8.96


12/7/09

Flame Ionization Detector
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: 239856

Lab Sample ID: 239856009

Client ID: BAG-S-002

Batch ID: 918539

Run Date: 11/06/2009 12:02

Prep Date: 11/03/2009 19:48

Data File: 008f0801.d

Date Collected: 10/23/2009 10:55

Date Received: 10/27/2009 09:00

Client: ECOL007

Method: SW846 8015A/B SVOC

Inst: FID7.I

Analyst: JMB3

Aliquot: 30.08 g

Column: DB-5MS

Matrix: SOIL

%Moisture: 16.9

Project: ECOL00209

SOP Ref: GL-OA-E-003

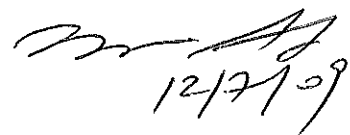
Dilution: 10

Inj. Vol: 1 µL

Final Volume: 1 mL

Level: LOW

CAS No.	Parpiname	Qualifier	Result	Units	MDL/LOD	PQL/LQQ
DRO	Diesel Range Organics	B	450	mg/kg	26.0	80.0



12/21/09

Flame Ionization Detector
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: 239856
Lab Sample ID: 239856010Client ID: BAG-S-003
Batch ID: 918539
Run Date: 11/06/2009 12:39
Prep Date: 11/03/2009 19:48
Data File: 009f0901.dDate Collected: 10/23/2009 11:00
Date Received: 10/27/2009 09:00
Client: ECOL007
Method: SW846 8015A/B SVOC
Inst: FID7.1
Analyst: JMB3
Aliquot: 30.06 g
Column: DB-5MSMatrix: SOIL
%Moisture: 13.9
Project: ECOL00209
SOP Ref: GL-OA-E-003
Dilution: 1
Inj. Vol: 1 uL
Final Volume: 1 mL
Level: LOW

CAS No.	Parname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
DRO	Diesel Range Organics	B	120	mg/kg	2.51	7.73

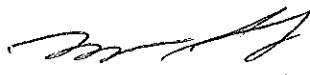

12/7/09

Flame Ionization Detector
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number:	239856	Matrix:	SOIL
Lab Sample ID:	1201962273		
Client Sample:	QC for batch 918537	Client:	ECOL007
Client ID:	MR for batch 918537	Method:	SW846 8015A/B SVOC
Batch ID:	918539	Inst:	FID71
Run Date:	11/05/2009 12:01	Analyst:	KXR2
Prep Date:	11/03/2009 19:48	Allquot:	30 g
Data File:	03713701.d	Column:	DB-5MS
		Project:	QC
		SQP Ref:	GL-OA-E-003
		Dilution:	1
		Inj. Vol:	1 uL
		Final Volume:	1 mL
		Level:	LOW

CAS No.	Formname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
DRO	Diesel Range Organics	J	2.56	mg/kg	2.17	6.67


12/7/09

Are there any known hazards applicable to these samples? If so, please list them.

8015 m for TPH / Diesel & Motor oil

WHITE = LABORATORY
YELLOW = FILE
PINK = CLIENT

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: <i>Halaco Building Assessment</i>	Location: <i>Halaco Engineering Company</i>
Project TDD Number: <i>T02-09-09-09-0002</i>	PAN: <i>002693.2053.01RA</i>

Laboratory: <i>GEL Laboratories</i>	Lab Project Number: <i>239856</i>
Sampling Dates: <i>October 23, 2009</i>	Sample Matrix: <i>Soil</i>
Analytical Method: <i>Gamma Spectroscopy (EML HASL 300 4.5.2.3), Alpha Spectroscopy – Th-228, Th-230, Th-232 (EML HASL 300, Th-01-RC Modified)</i>	Data Reviewer: <i>Joanna Z. Christopher</i>

REVIEW AND APPROVAL:

Data Reviewer: *Joanna Z. Christopher*
 Technical QA Reviewer: *[Signature]*
 Project Manager: *[Signature]*

Date: *12/10/09*
 Date: *12/10/09*
 Date: *12/10/09*

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	BAG-S-001	239856008
2	BAG-S-002	239856009
3	BAG-S-003	239856010
4	SME-S-002	239856002
5	SME-S-003	239856003
6	SME-S-005	239856006
7	SME-S-006	239856007
8	SME-S-1003	239856004

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

<u> X </u>	Included: no problems
<u> * </u>	Included: problems noted in review
<u> O </u>	Not Included and/or Not Available
<u> NR </u>	Not Required
<u> RS </u>	Provided As Re-submission

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: <i>Halaco Building Assessment</i>	Location: <i>Halaco Engineering Company</i>
Project TDD Number: <i>T02-09-09-09-0002</i>	PAN: <i>002693,2053,01RA</i>

Case Narrative:

☒ Case Narrative present

Quality Control Summary Package:

☒ Data Summary sheets
☒ Initial and Continuing Calibration results
☒ Detector Background Control Charts
☒ Matrix Spike recoveries
☒ Matrix Duplicate results
☒ Field Duplicate results
☒ Laboratory Control Sample recoveries
☒ Analysis Detection Limits
☒ Preparation Log
☒ Analysis Run Log

Raw QC Data Package Section

☒ Chain-of-Custody Records
☒ Instrument Printouts
☒ Sample Preparation Notebook Pages
☒ Logbook and Worksheet Pages
☒ Percent Solids Determination

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: <i>Halaco Bulding Assessment</i>	Location: <i>Halaco Engineering Company</i>
Project TDD Number: <i>T02-09-09-09-0002</i>	PAN: <i>002693.2053.01RA</i>

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	Holding Times	Yes
2	Initial and Continuing Calibrations	Yes
3	Laboratory Control Sample	Yes
4	Matrix Spike	Yes for Alpha Spec Thorium; Not Required for gamma spec of soils
5	Blanks and Background Samples	Yes
6	Duplicate Analyses	Yes (Matrix and Field Duplicates)
7	Analyte Quantitation	Yes
8	Overall Assessment of Data	Yes
9	Usability of Data	Yes

Comments:

A field duplicate sample was collected for sample SME-S-003 (SME-S-1003). Precision for the field duplicate sample pair was satisfactory. Precision was evaluated by RPD (relative percent difference) and NAD (normalized absolute difference).

Four gamma spec results were qualified with UJ (actinium-228 and radium-228 for sample SME-S-003, bismuth-214 for sample BAG-S-002, and lead-214 for sample SME-S-1003 – the field duplicate) for low abundance (peak area ratios were incorrect when compared with the known relative abundances). The UJ qualifier indicates that the detection limit may be estimated or uncertain. The thorium-230 result for sample BAG-S-001 was more negative than three sigma total propagated uncertainty and less negative than three sigma counting uncertainty. The laboratory re-counted the sample three times and did not find any reportable Th-230. The result was reported and qualified with a UJ. The detection limits were below the reporting limits.

Laboratory QC sample results were acceptable (laboratory replicates, method blanks, matrix spikes for alpha spectroscopy, and laboratory control standards). Tracer recoveries for alpha spectroscopy were acceptable. Laboratory annual calibrations and daily checks were acceptable.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: <i>Halaco Building Assessment</i>	Location: <i>Halaco Engineering Company</i>
Project TDD Number: <i>T02-09-09-09-0002</i>	PAN: <i>002693.2053.01RA</i>

1. HOLDING TIMES

☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable

Samples were analyzed within required holding times. No problems were identified with regard to sample preservation or custody.

All Sample Matrices:

Radiochemistry analyses: 6 months from collection to analysis.

Comments:

For this gamma spectroscopic analysis there was no time period for ingrowth (for radon gas to decay to bismuth for analysis) because radium-226 was not a requested analyte. The samples were analyzed 10 to 12 days after collection.

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable

Unless flagged below, an initial calibration verification (ICV), background, and efficiency check were performed for each gamma detector at the beginning of the run, and were within the laboratory acceptance limits.

Comments:

The laboratory included these data for the alpha and gamma detectors for the dates of analysis and the results were acceptable.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: <i>Halaco Building Assessment</i>	Location: <i>Halaco Engineering Company</i>
Project TDD Number: <i>T02-09-09-09-0002</i>	PAN: <i>002693.2053.01RA</i>

3. LABORATORY CONTROL SAMPLE

- ☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated non-detected results are rejected (R) and detected results are qualified as estimated (J).

Comments:

Mixed gamma LCSs containing americium-241, cesium-137, and cobalt-60 were analyzed every 20 samples with acceptable recoveries within 75% to 125%. An alpha spectroscopy LCS containing thorium-230 was analyzed every 20 samples with acceptable recovery within 70% to 130%.

4. MATRIX SPIKE AND TRACER (ALPHA SPEC ONLY)

- ☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one matrix spike sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%. Tracer recoveries are used for a quantitative indication of accuracy due to matrix effects in alpha isotopic analysis. Each sample was traced with a known quantity of thorium-229. Recoveries were within a range of 74% to 80% (the laboratory's acceptance range is 15% to 125%).

Comments:

Matrix spikes are not required and are not routinely performed for gamma spectroscopy analysis of soil samples using petri dish geometry. An alpha spectroscopy matrix spike containing thorium-230 was analyzed with acceptable recovery within 75% to 125% for sample SME-S-002.

Alpha spec samples were traced with thorium-229 with acceptable recoveries (74% to 80%).

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: <i>Halaco Building Assessment</i>	Location: <i>Halaco Engineering Company</i>
Project TDD Number: <i>T02-09-09-09-0002</i>	PAN: <i>002693.2053.01RA</i>

5. BLANKS AND BACKGROUND SAMPLES

☒ Acceptable
☐ Detection Limits Adjusted

The following blanks were analyzed:

☒ Method (preparation) Blanks
☐ Field Blanks
☒ Calibration Blanks (instrument background check)
☐ Rinsate Blanks
☐ Background Samples

Preparation (method) blanks were prepared for each batch of samples that was analyzed. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments:

The method blank was analyzed for by gamma spectroscopy for the entire list of analytes and results were below the detection limits.

The method blank was analyzed by alpha spectroscopy for thorium-228, thorium-230, and thorium-232 and results were below the detection limits.

The instrument background checks were acceptable.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: <i>Halaco Building Assessment</i>	Location: <i>Halaco Engineering Company</i>
Project TDD Number: <i>T02-09-09-09-0002</i>	PAN: <i>002693.2053.01RA</i>

6. DUPLICATE ANALYSES

- ☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ No Duplicates Analyzed

Type of duplicates analyzed:

- ☒ Field Duplicates
☒ Laboratory Duplicates

Calculate the relative Percent Difference (RPD) and the Normalized Absolute Difference (NAD) between the members of duplicate pairs using the equations indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples or whose NAD exceeds 1.96.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

$$NAD = \frac{(\text{Value 1} - \text{Value 2})}{\sqrt{((\text{Unc 1}/2)^2 + (\text{Unc 2}/2)^2)}$$

Comments:

One laboratory duplicate was analyzed with every 20 samples (SME-S-002). A field duplicate sample was collected for sample SME-S-003 (SME-S-1003). The RPDs or NADs for all alpha and gamma spectroscopy analytes for the laboratory replicate and the field duplicate were acceptable for precision, below 35% RPD or 1.96 NAD, except a few gamma emitters with results that were below the detection limit, qualified with a UJ, or negative and were therefore not qualified. Each laboratory duplicate sample consisted of a second mass of the original sample, prepared and analyzed as a separate sample.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: <i>Halaco Building Assessment</i>	Location: <i>Halaco Engineering Company</i>
Project TDD Number: <i>T02-09-09-09-0002</i>	PAN: <i>002693.2053.01RA</i>

7. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formula:

$$\text{Analyte (pCi/g)} = \frac{\text{net peak area} \times \text{decay factor}}{2.22 \times \text{counting efficiency} \times \text{sample mass} \times \text{isotopic abundance} \times \text{count time} \times \text{ingrowth factor}}$$

Comments: Gamma and alpha spec quantitation are performed by the instrument software using the sample mass and geometry, and the results are quantitative in the instrument output. 10% of the results were checked with reproducibility within 10%.

8. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

☒ Acceptable
☐ Acceptable with Qualification
☐ Rejected

Accepted data meet the minimum requirements for the following EPA data category:

☐ ERS Screening
☐ Non-definitive with 10 % Confirmation by Definitive Methodology
☐ Definitive, Comprehensive Statistical Error Determination was performed.
☒ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments:

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: <i>Halaco Building Assessment</i>	Location: <i>Halaco Engineering Company</i>
Project TDD Number: <i>T02-09-09-09-0002</i>	PAN: <i>002693.2053.01RA</i>

9. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: None.

Resolution:

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : Ecology & Environment, Inc.
Address : 3700 Industry Ave.
Suite 102
Lakewood, California 90712
Contact: Ms. Mindy Song
Project: Halaco CAM Metals Analysis

Report Date: November 16, 2009

Client Sample ID: SMB-S-002
Sample ID: 239856002
Matrix: Soil
Collect Date: 23-OCT-09 10:30
Receive Date: 27-OCT-09
Collector: Client
Moisture: 16.5%

Project: ECOL00209
Client ID: ECOL007

Parameter	Qualifier	Result	Uncertainty	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Alpha Spec Analysis												
Alphaspec Th, Solid "Dry Weight Corrected"												
Thorium-228	U	0.0212	+/-0.274	0.711	1.00	pCi/g		CXM211	11/12/09	1057	916611	1
Thorium-230	U	0.404	+/-0.386	0.431	1.00	pCi/g						
Thorium-232	U	0.151	+/-0.247	0.431	1.00	pCi/g						
Rad Gamma Spec Analysis												
Gammasspec, Gamma, Solid (Standard List) "Dry Weight Corrected"												
Actinium-228	U	0.373	+/-0.316	0.379		pCi/g		MXR111	11/02/09	2255	916603	2
Americium-241	U	-0.125	+/-0.140	0.198		pCi/g						
Antimony-124	U	-0.0228	+/-0.110	0.175		pCi/g						
Antimony-125	U	0.109	+/-0.105	0.189		pCi/g						
Barium-133	U	-0.00726	+/-0.0594	0.087		pCi/g						
Barium-140	U	0.142	+/-0.253	0.432		pCi/g						
Beryllium-7	U	-0.26	+/-0.375	0.600		pCi/g						
Bismuth-212	U	0.0458	+/-0.367	0.611		pCi/g						
Bismuth-214	U	0.159	+/-0.157	0.201		pCi/g						
Cerium-139	U	-0.00899	+/-0.0302	0.0492		pCi/g						
Cerium-141	U	0.0433	+/-0.058	0.099		pCi/g						
Cerium-144	U	0.073	+/-0.207	0.348		pCi/g						
Cesium-134	U	0.0694	+/-0.0609	0.108		pCi/g						
Cesium-136	U	-0.0666	+/-0.128	0.207		pCi/g						
Cesium-137	U	0.00181	+/-0.0481	0.0799	0.100	pCi/g						
Chromium-51	U	-0.0669	+/-0.392	0.664		pCi/g						
Cobalt-56	U	0.0204	+/-0.0534	0.0938		pCi/g						
Cobalt-57	U	-0.0111	+/-0.0248	0.0404		pCi/g						
Cobalt-58	U	-0.0153	+/-0.055	0.0881		pCi/g						
Cobalt-60	U	0.00982	+/-0.0587	0.0996		pCi/g						
Europium-152	U	-0.0143	+/-0.127	0.196		pCi/g						
Europium-154	U	-0.00191	+/-0.180	0.300		pCi/g						
Europium-155	U	0.0606	+/-0.106	0.182		pCi/g						
Iridium-192	U	0.0195	+/-0.0388	0.0678		pCi/g						
Iron-59	U	0.127	+/-0.125	0.227		pCi/g						
Lead-210	U	-2.94	+/-2.52	3.93		pCi/g						
Lead-212		0.141	+/-0.101	0.109		pCi/g						
Lead-214		0.174	+/-0.144	0.139		pCi/g						
Manganese-54	U	-0.0206	+/-0.0459	0.0758		pCi/g						
Mercury-203	U	0.00913	+/-0.0428	0.0741		pCi/g						
Neodymium-147	U	-0.171	+/-0.516	0.842		pCi/g						

Christy 12/10/09

GEL LABORATORIES LLC

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Certificate of Analysis

Company : Ecology & Environment, Inc.
Address : 3700 Industry Ave.
Suite 102
Lakewood, California 90712
Contact: Ms. Mindy Song
Project: Halaco CAM Metals Analysis

Report Date: November 16, 2009

Client Sample ID: SME-S-002
Sample ID: 239856002

Project: ECOL00209
Client ID: ECOL007

Parameter	Qualifier	Result	Uncertainty	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gamma Spec Analysis												
GammaSpec, Gamma, Solid (Standard List) "Dry Weight Corrected"												
Neptunium-239	U	-0.0332	+/-0.192	0.318		pCi/g						
Niobium-94	U	-0.0065	+/-0.0436	0.0711		pCi/g						
Niobium-95	U	0.0486	+/-0.0526	0.0921		pCi/g						
Potassium-40		44.3	+/-3.98	0.722		pCi/g						
Promethium-144	U	0.0175	+/-0.0478	0.0809		pCi/g						
Promethium-146	U	-0.0197	+/-0.0625	0.0899		pCi/g						
Radium-228	U	0.373	+/-0.316	0.379		pCi/g						
Ruthenium-106	U	-0.166	+/-0.412	0.663		pCi/g						
Silver-110m	U	-0.0218	+/-0.041	0.0647		pCi/g						
Sodium-22	U	-0.000152	+/-0.0642	0.107		pCi/g						
Thallium-208	U	0.0533	+/-0.0803	0.0958		pCi/g						
Thorium-234	U	-1.49	+/-1.18	1.75		pCi/g						
Tin-113	U	-0.0115	+/-0.0516	0.0862		pCi/g						
Uranium-235	U	-0.0336	+/-0.246	0.369		pCi/g						
Uranium-238	U	-1.49	+/-1.18	1.75		pCi/g						
Yttrium-88	U	-0.00724	+/-0.0471	0.078		pCi/g						
Zinc-65	U	-0.0589	+/-0.140	0.229		pCi/g						
Zirconium-95	U	0.0042	+/-0.0906	0.150		pCi/g						

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	MXP2	10/28/09	1621	916401

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	DOB EML HASL-300, Th-01-RC Modified	
2	DOB HASL 300, 4.5.2.3/Ga-01-R	

Surrogate/Tracer recovery	Test	Result	Nominal	Recovery %	Acceptable Limits
Thorium-229 Tracer	Alphaspec Th, Solid "Dry Weight Corrected"			81.4	(15%-125%)

John Christopher 12/10/09

GEL LABORATORIES LLC

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Address : 3700 Industry Ave.
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Lakewood, California 90712
Contact: Ms. Mindy Song
Project: Halaco CAM Metals Analysis

Report Date: November 16, 2009

Client Sample ID: SME-S-003
Sample ID: 239856003
Matrix: Soil
Collect Date: 23-OCT-09 10:35
Receive Date: 27-OCT-09
Collector: Client
Moisture: 16.9%

Project: ECOL00209
Client ID: ECOL007

Parameter	Qualifier	Result	Uncertainty	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Alpha Spec Analysis												
Alphaspec Th, Solid "Dry Weight Corrected"												
Thorium-228	U	-0.00396	+/-0.208	0.632	1.00	pCi/g		CXM	211/12/09	1057	916611	1
Thorium-230	U	0.490	+/-0.455	0.574	1.00	pCi/g						
Thorium-232	U	0.0867	+/-0.184	0.282	1.00	pCi/g						
Rad Gamma Spec Analysis												
Gammascpec, Gamma, Solid (Standard List) "Dry Weight Corrected"												
Actinium-228	UI	0.00	+/-0.229	0.292		pCi/g		MXR	111/02/09	2256	916603	2
Americium-241	U	-0.00774	+/-0.166	0.283		pCi/g						
Antimony-124	U	-0.0646	+/-0.070	0.102		pCi/g						
Antimony-125	U	-0.00937	+/-0.082	0.138		pCi/g						
Barium-133	U	0.0511	+/-0.044	0.0675		pCi/g						
Barium-140	U	0.154	+/-0.193	0.326		pCi/g						
Beryllium-7	U	-0.219	+/-0.277	0.443		pCi/g						
Bismuth-212	U	-0.0637	+/-0.309	0.460		pCi/g						
Bismuth-214		0.142	+/-0.131	0.121		pCi/g						
Cerium-139	U	0.00716	+/-0.0238	0.0415		pCi/g						
Cerium-141	U	-0.0237	+/-0.0492	0.0736		pCi/g						
Cerium-144	U	-0.0859	+/-0.170	0.270		pCi/g						
Cesium-134	U	0.000433	+/-0.042	0.0708		pCi/g						
Cesium-136	U	-0.0438	+/-0.0844	0.139		pCi/g						
Cesium-137	U	0.0199	+/-0.0329	0.0582	0.100	pCi/g						
Chromium-51	U	0.0491	+/-0.300	0.497		pCi/g						
Cobalt-56	U	0.00821	+/-0.0391	0.0664		pCi/g						
Cobalt-57	U	0.00608	+/-0.0211	0.035		pCi/g						
Cobalt-58	U	0.0253	+/-0.0324	0.0573		pCi/g						
Cobalt-60	U	-0.034	+/-0.037	0.0556		pCi/g						
Europium-152	U	-0.00857	+/-0.0996	0.141		pCi/g						
Europium-154	U	-0.0542	+/-0.111	0.177		pCi/g						
Europium-155	U	-0.0298	+/-0.0899	0.146		pCi/g						
Iridium-192	U	0.00182	+/-0.0294	0.0486		pCi/g						
Iron-59	U	-0.0151	+/-0.0725	0.121		pCi/g						
Lead-210	U	-42.5	+/-10.5	12.3		pCi/g						
Lead-212	U	0.108	+/-0.0923	0.117		pCi/g						
Lead-214	U	0.101	+/-0.126	0.108		pCi/g						
Manganese-54	U	-0.0115	+/-0.0345	0.0565		pCi/g						
Mercury-203	U	0.0398	+/-0.0336	0.0586		pCi/g						
Neodymium-147	U	0.0789	+/-0.375	0.633		pCi/g						

Christopher 12/10/09

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Certificate of Analysis

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Contact: Ms. Mindy Song
Project: Halaco CAM Metals Analysis

Report Date: November 16, 2009

Client Sample ID: SME-S-003
Sample ID: 239856003

Project: ECOL00209
Client ID: ECOL007

Parameter	Qualifier	Result	Uncertainty	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gamma Spec Analysis												
GammaSpec, Gamma, Solid (Standard List) "Dry Weight Corrected"												
Neptunium-239	U	-0.0586	+/-0.161	0.260		pCi/g						
Niobium-94	U	-0.00463	+/-0.0321	0.0542		pCi/g						
Niobium-95	U	0.013	+/-0.0345	0.0597		pCi/g						
Potassium-40		11.8	+/-1.66	0.528		pCi/g						
Promethium-144	U	0.0316	+/-0.0335	0.0597		pCi/g						
Promethium-146	U	-0.0105	+/-0.0379	0.0629		pCi/g						
Radium-228	U	0.00	+/-0.229	0.292		pCi/g						
Ruthenium-106	U	0.0805	+/-0.300	0.502		pCi/g						
Silver-110m	U	-0.00771	+/-0.0305	0.0514		pCi/g						
Sodium-22	U	-0.0256	+/-0.0399	0.063		pCi/g						
Thallium-208		0.057	+/-0.0509	0.0563		pCi/g						
Thorium-234	U	-2.04	+/-1.70	2.38		pCi/g						
Tin-113	U	0.0185	+/-0.0364	0.0638		pCi/g						
Uranium-235	U	0.0592	+/-0.215	0.282		pCi/g						
Uranium-238	U	-2.04	+/-1.70	2.38		pCi/g						
Yttrium-88	U	-0.00796	+/-0.0366	0.0594		pCi/g						
Zinc-65	U	-0.0169	+/-0.0938	0.134		pCi/g						
Zirconium-95	U	0.00231	+/-0.0598	0.102		pCi/g						

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	MXP2	10/28/09	1621	916401

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	DOE EML HASL-300, Th-01-RC Modified	
2	DOE HASL 300, 4.5.2.3/Ga-01-R	

Surrogate/Tracer recovery	Test	Result	Nominal	Recovery %	Acceptable Limits
Thorium-229 Tracer	Alphaspec Th, Solid "Dry Weight Corrected"			73.9	(15%-125%)

John Christensen 12/10/09

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : Ecology & Environment, Inc.
Address : 3700 Industry Ave.
Suite 102
Lakewood, California 90712
Contact: Ms. Mindy Song
Project: Halaco CAM Metals Analysis

Report Date: November 16, 2009

Client Sample ID: SME-S-1003
Sample ID: 239856004
Matrix: Soil
Collect Date: 23-OCT-09 10:37
Receive Date: 27-OCT-09
Collector: Client
Moisture: 17.1%

Project: ECOL00209
Client ID: ECOL007

Parameter	Qualifier	Result	Uncertainty	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Alpha Spec Analysis												
<i>Alphaspec Th, Solid "Dry Weight Corrected"</i>												
Thorium-228	U	0.176	+/-0.250	0.277	1.00	pCi/g		CXM211	11/12/09	1042	916611	1
Thorium-230	U	0.251	+/-0.295	0.271	1.00	pCi/g						
Thorium-232	U	0.0828	+/-0.177	0.271	1.00	pCi/g						
Rad Gamma Spec Analysis												
<i>Gammascpec, Gamma, Solid (Standard List) "Dry Weight Corrected"</i>												
Actinium-228	U	0.0435	+/-0.253	0.383		pCi/g		MXR111	03/09	0933	916603	2
Americium-241	U	-0.101	+/-0.218	0.361		pCi/g						
Antimony-124	U	-0.0296	+/-0.110	0.171		pCi/g						
Antimony-125	U	0.0491	+/-0.103	0.178		pCi/g						
Barium-133	U	0.0372	+/-0.0513	0.0814		pCi/g						
Barium-140	U	-0.0317	+/-0.250	0.403		pCi/g						
Beryllium-7	U	0.0458	+/-0.350	0.584		pCi/g						
Bismuth-212	U	0.533	+/-0.366	0.690		pCi/g						
Bismuth-214	U	0.142	+/-0.172	0.195		pCi/g						
Cerium-139	U	-0.0316	+/-0.0329	0.0504		pCi/g						
Cerium-141	U	0.0183	+/-0.0559	0.0935		pCi/g						
Cerium-144	U	-0.0936	+/-0.195	0.311		pCi/g						
Cesium-134	U	0.0176	+/-0.0575	0.0996		pCi/g						
Cesium-136	U	0.0828	+/-0.124	0.220		pCi/g						
Cesium-137	U	-0.0199	+/-0.0464	0.0759	0.100	pCi/g						
Chromium-51	U	-0.0792	+/-0.389	0.648		pCi/g						
Cobalt-56	U	0.00629	+/-0.0481	0.0817		pCi/g						
Cobalt-57	U	-0.00214	+/-0.0311	0.0455		pCi/g						
Cobalt-58	U	-0.0308	+/-0.0453	0.0698		pCi/g						
Cobalt-60	U	0.00344	+/-0.0484	0.0828		pCi/g						
Europium-152	U	0.110	+/-0.118	0.210		pCi/g						
Europium-154	U	-0.0248	+/-0.156	0.259		pCi/g						
Europium-155	U	0.000753	+/-0.110	0.183		pCi/g						
Iridium-192	U	0.0175	+/-0.0385	0.067		pCi/g						
Iron-59	U	-0.0529	+/-0.0895	0.132		pCi/g						
Lead-210	U	-11.5	+/-12.1	16.2		pCi/g						
Lead-212	U	0.0449	+/-0.0931	0.136		pCi/g						
Lead-214	U/ μ S	0.00	+/-0.140	0.181		pCi/g						
Manganese-54	U	-0.0161	+/-0.0459	0.0741		pCi/g						
Mercury-203	U	0.0198	+/-0.0429	0.0751		pCi/g						
Neodymium-147	U	0.330	+/-0.531	0.917		pCi/g						

Joanna Christopher 12/10/09

GEL LABORATORIES LLC

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Certificate of Analysis

Company : Ecology & Environment, Inc.
Address : 3700 Industry Ave.
Suite 102
Lakewood, California 90712
Contact: Ms. Mindy Song
Project: Halaco CAM Metals Analysis

Report Date: November 16, 2009

Client Sample ID: SME-S-1003
Sample ID: 239856004

Project: ECOL00209
Client ID: ECOL007

Parameter	Qualifier	Result	Uncertainty	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gamma Spec Analysis												
GammaSpec, Gamma, Solid (Standard List) "Dry Weight Corrected"												
Neptunium-239	U	-0.00567	+/-0.190	0.313		pCi/g						
Niobium-94	U	0.0421	+/-0.0471	0.0852		pCi/g						
Niobium-95	U	-0.0163	+/-0.048	0.0781		pCi/g						
Potassium-40		13.6	+/-2.11	0.793		pCi/g						
Promethium-144	U	-0.0361	+/-0.0508	0.0747		pCi/g						
Promethium-146	U	0.0635	+/-0.0525	0.0949		pCi/g						
Radium-228	U	0.0435	+/-0.253	0.383		pCi/g						
Ruthenium-106	U	0.0262	+/-0.394	0.679		pCi/g						
Silver-110m	U	-0.0155	+/-0.0434	0.0716		pCi/g						
Sodium-22	U	-0.00489	+/-0.0552	0.0926		pCi/g						
Thallium-208	U	0.0462	+/-0.0724	0.092		pCi/g						
Thorium-234	U	-1.21	+/-2.17	3.05		pCi/g						
Tin-113	U	-0.0422	+/-0.0467	0.0715		pCi/g						
Uranium-235	U	-0.234	+/-0.241	0.333		pCi/g						
Uranium-238	U	-1.21	+/-2.17	3.05		pCi/g						
Yttrium-88	U	0.011	+/-0.0475	0.0824		pCi/g						
Zinc-65	U	-0.0949	+/-0.119	0.176		pCi/g						
Zirconium-95	U	0.0788	+/-0.0778	0.144		pCi/g						

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	MXP2	10/28/09	1621	916401

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	DOE EML HASL-300, Th-01-RC Modified	
2	DOE HASL 300, 4.5.2.3/Ga-01-R	

Surrogate/Tracer recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Thorium-229 Tracer	Alphaspec Th, Solid "Dry Weight Corrected"			79.4	(15%-125%)

J. Christopher 12/10/09

GEL LABORATORIES LLC

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Certificate of Analysis

Company : Ecology & Environment, Inc.
Address : 3700 Industry Ave.
Suite 102
Lakewood, California 90712
Contact: Ms. Mindy Song
Project: Halaco CAM Metals Analysis

Report Date: November 16, 2009

Client Sample ID: SME-S-005
Sample ID: 239856006
Matrix: Soil
Collect Date: 23-OCT-09 10:42
Receive Date: 27-OCT-09
Collector: Client
Moisture: 18.6%

Project: ECOL00209
Client ID: ECOL007

Parameter	Qualifier	Result	Uncertainty	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Alpha Spec Analysis												
<i>Alphaspec Th, Solid "Dry Weight Corrected"</i>												
Thorium-228	U	0.0331	+/-0.162	0.434	1.00	pCi/g		CXM211	11/12/09	1042	916611	1
Thorium-230		0.271	+/-0.282	0.230	1.00	pCi/g						
Thorium-232	U	0.110	+/-0.214	0.425	1.00	pCi/g						
Rad Gamma Spec Analysis												
<i>GammaSpec, Gamma, Solid (Standard List) "Dry Weight Corrected"</i>												
Actinium-228	U	-0.225	+/-0.164	0.232		pCi/g		MXR111	03/09	0934	916603	2
Americium-241	U	0.0535	+/-0.0983	0.174		pCi/g						
Antimony-124	U	-0.0728	+/-0.0758	0.103		pCi/g						
Antimony-125	U	0.039	+/-0.0901	0.154		pCi/g						
Barium-133	U	0.0157	+/-0.0417	0.0636		pCi/g						
Barium-140	U	0.244	+/-0.204	0.355		pCi/g						
Beryllium-7	U	-0.0574	+/-0.282	0.455		pCi/g						
Bismuth-212	U	0.245	+/-0.260	0.472		pCi/g						
Bismuth-214	U	0.102	+/-0.136	0.154		pCi/g						
Cerium-139	U	-0.0148	+/-0.023	0.0363		pCi/g						
Cerium-141	U	-0.0193	+/-0.0507	0.0743		pCi/g						
Cerium-144	U	0.000416	+/-0.156	0.260		pCi/g						
Cesium-134	U	-0.000814	+/-0.0498	0.0759		pCi/g						
Cesium-136	U	-0.0703	+/-0.102	0.163		pCi/g						
Cesium-137	U	-0.0255	+/-0.0476	0.068	0.100	pCi/g						
Chromium-51	U	0.067	+/-0.300	0.514		pCi/g						
Cobalt-56	U	-0.0173	+/-0.040	0.0636		pCi/g						
Cobalt-57	U	0.000777	+/-0.0189	0.0316		pCi/g						
Cobalt-58	U	0.0221	+/-0.0397	0.0694		pCi/g						
Cobalt-60	U	0.0113	+/-0.0459	0.0788		pCi/g						
Europium-152	U	0.0426	+/-0.0844	0.147		pCi/g						
Europium-154	U	-0.0074	+/-0.141	0.235		pCi/g						
Europium-155	U	0.0575	+/-0.0791	0.138		pCi/g						
Iridium-192	U	0.00776	+/-0.0299	0.0515		pCi/g						
Iron-59	U	0.116	+/-0.0964	0.180		pCi/g						
Lead-210	U	-1.63	+/-2.91	4.27		pCi/g						
Lead-212	U	0.0685	+/-0.0829	0.102		pCi/g						
Lead-214	U	0.0989	+/-0.0936	0.132		pCi/g						
Manganese-54	U	-0.00707	+/-0.036	0.0586		pCi/g						
Mercury-203	U	-0.0416	+/-0.0379	0.0521		pCi/g						
Neodymium-147	U	-0.0609	+/-0.399	0.640		pCi/g						

J. Christopher 12/16/09

GEL LABORATORIES LLC

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Certificate of Analysis

Company : Ecology & Environment, Inc.
Address : 3700 Industry Ave.
Suite 102
Lakewood, California 90712
Contact: Ms. Mindy Song
Project: Halon CAM Metals Analysis

Report Date: November 16, 2009

Client Sample ID: SME-S-005
Sample ID: 239856006

Project: ECOL00209
Client ID: ECOL007

Parameter	Qualifier	Result	Uncertainty	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gamma Spec Analysis												
GammaSpec, Gamma, Solid (Standard List) "Dry Weight Corrected"												
Neptunium-239	U	-0.0132	+/-0.144	0.239		pCi/g						
Niobium-94	U	-0.00369	+/-0.0342	0.0572		pCi/g						
Niobium-95	U	0.00193	+/-0.0409	0.0687		pCi/g						
Potassium-40		32.1	+/-2.95	0.620		pCi/g						
Promethium-144	U	0.0137	+/-0.0362	0.0629		pCi/g						
Promethium-146	U	0.0109	+/-0.0395	0.0666		pCi/g						
Radium-228	U	-0.225	+/-0.164	0.232		pCi/g						
Ruthenium-106	U	-0.163	+/-0.306	0.497		pCi/g						
Silver-110m	U	-0.0223	+/-0.0346	0.0554		pCi/g						
Sodium-22	U	-0.00265	+/-0.0502	0.0838		pCi/g						
Thallium-208	U	-0.0328	+/-0.0428	0.0663		pCi/g						
Thorium-234	U	-0.587	+/-1.04	1.63		pCi/g						
Tin-113	U	-0.019	+/-0.0395	0.0634		pCi/g						
Uranium-235	U	-0.00488	+/-0.194	0.294		pCi/g						
Uranium-238	U	-0.587	+/-1.04	1.63		pCi/g						
Yttrium-88	U	0.0139	+/-0.0353	0.0639		pCi/g						
Zinc-65	U	-0.102	+/-0.108	0.169		pCi/g						
Zirconium-95	U	0.016	+/-0.0585	0.101		pCi/g						

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	MXP2	10/28/09	1621	916401

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	DOB EML HASL-300, Th-01-RC Modified	
2	DOB HASL 300, 4.5.2.3/Ga-01-R	

Surrogate/Tracer recovery	Test	Result	Nominal	Recovery %	Acceptable Limits
Thorium-229 Tracer	Alphaspec Th, Solid "Dry Weight Corrected"			88.7	(15%-125%)

J. Christopher 12/16/09

GEL LABORATORIES LLC

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Certificate of Analysis

Company : Ecology & Environment, Inc.
Address : 3700 Industry Ave.
Suite 102
Lakewood, California 90712
Contact: Ms, Mindy Song
Project: Halaco CAM Metals Analysis

Report Date: November 16, 2009

Client Sample ID: SME-S-006
Sample ID: 239856007
Matrix: Soil
Collect Date: 23-OCT-09 11:10
Receive Date: 27-OCT-09
Collector: Client
Moisture: 21%

Project: ECOL00209
Client ID: ECOL007

Parameter	Qualifier	Result	Uncertainty	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Alpha Spec Analysis												
Alphaspec Th, Solid "Dry Weight Corrected"												
Thorium-228	U	0.0855	+/-0.257	0.590	1.00	pCi/g			CXM211/12/09	1042	916611	1
Thorium-230		0.512	+/-0.415	0.263	1.00	pCi/g						
Thorium-232		0.519	+/-0.418	0.263	1.00	pCi/g						
Rad Gamma Spec Analysis												
Gammasspec, Gamma, Solid (Standard List) "Dry Weight Corrected"												
Actinium-228	U	0.140	+/-0.175	0.307		pCi/g			MXR111/03/09	0934	916603	2
Americium-241	U	0.0282	+/-0.153	0.233		pCi/g						
Antimony-124	U	-0.0141	+/-0.0763	0.125		pCi/g						
Antimony-125	U	0.0211	+/-0.0904	0.155		pCi/g						
Barium-133	U	-0.0945	+/-0.0447	0.0649		pCi/g						
Barium-140	U	0.107	+/-0.203	0.347		pCi/g						
Beryllium-7	U	-0.289	+/-0.315	0.496		pCi/g						
Bismuth-212	U	0.342	+/-0.291	0.521		pCi/g						
Bismuth-214	U	0.00993	+/-0.0932	0.144		pCi/g						
Cerium-139	U	-0.0138	+/-0.0273	0.0444		pCi/g						
Cerium-141	U	0.0344	+/-0.0512	0.0851		pCi/g						
Cerium-144	U	0.0406	+/-0.220	0.326		pCi/g						
Cesium-134	U	-0.00175	+/-0.0473	0.0808		pCi/g						
Cesium-136	U	-0.00452	+/-0.115	0.192		pCi/g						
Cesium-137	U	0.00895	+/-0.0405	0.0679	0.100	pCi/g						
Chromium-51	U	-0.25	+/-0.314	0.514		pCi/g						
Cobalt-56	U	0.0189	+/-0.0447	0.0784		pCi/g						
Cobalt-57	U	0.00523	+/-0.0235	0.0397		pCi/g						
Cobalt-58	U	0.00978	+/-0.0402	0.0699		pCi/g						
Cobalt-60	U	0.0476	+/-0.0485	0.0882		pCi/g						
Europium-152	U	-0.0733	+/-0.0949	0.155		pCi/g						
Europium-154	U	0.0233	+/-0.153	0.258		pCi/g						
Europium-155	U	-0.00752	+/-0.0926	0.156		pCi/g						
Iridium-192	U	-0.0035	+/-0.0316	0.0538		pCi/g						
Iron-59	U	0.0312	+/-0.115	0.197		pCi/g						
Lead-210	U	-4.05	+/-4.10	6.22		pCi/g						
Lead-212	U	0.0926	+/-0.0911	0.118		pCi/g						
Lead-214	U	-0.0472	+/-0.0845	0.127		pCi/g						
Manganese-54	U	-0.0325	+/-0.0454	0.0697		pCi/g						
Mercury-203	U	0.0204	+/-0.0339	0.060		pCi/g						
Neodymium-147	U	0.407	+/-0.431	0.762		pCi/g						

J. Christopher 12/10/09

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : Ecology & Environment, Inc.
Address : 3700 Industry Ave.
Suite 102
Lakewood, California 90712
Contact: Ms. Mindy Song
Project: Halaco CAM Metals Analysis

Report Date: November 16, 2009

Client Sample ID:		SME-S-006		Project:		ECOL00209						
Sample ID:		239856007		Client ID:		ECOL007						
Parameter	Qualifier	Result	Uncertainty	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gamma Spec Analysis												
Gammascpec, Gamma, Solid (Standard List) "Dry Weight Corrected"												
Neptunium-239	U	-0.14	+/-0.175	0.284		pCi/g						
Niobium-94	U	-0.00396	+/-0.036	0.0587		pCi/g						
Niobium-95	U	0.0294	+/-0.0441	0.0759		pCi/g						
Potassium-40		54.0	+/-5.17	0.664		pCi/g						
Promethium-144	U	0.00924	+/-0.0371	0.0622		pCi/g						
Promethium-146	U	0.00257	+/-0.0405	0.0685		pCi/g						
Radium-228	U	0.140	+/-0.175	0.307		pCi/g						
Ruthenium-106	U	-0.391	+/-0.341	0.513		pCi/g						
Silver-110m	U	-0.00921	+/-0.0378	0.0613		pCi/g						
Sodium-22	U	0.0106	+/-0.0549	0.0929		pCi/g						
Thallium-208	U	0.0264	+/-0.0539	0.0554		pCi/g						
Thorium-234	U	0.163	+/-1.51	1.89		pCi/g						
Tin-113	U	-0.014	+/-0.0411	0.0682		pCi/g						
Uranium-235	U	-0.0666	+/-0.229	0.301		pCi/g						
Uranium-238	U	0.163	+/-1.51	1.89		pCi/g						
Yttrium-88	U	-0.0161	+/-0.0424	0.0671		pCi/g						
Zinc-65	U	-0.0768	+/-0.122	0.196		pCi/g						
Zirconium-95	U	-0.0253	+/-0.0741	0.118		pCi/g						

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	MP2	10/28/09	1621	916401

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	DOE EML HASL-300, Th-01-RC Modified	
2	DOE HASL 300, 4.5.2.3/Ga-01-R	

Surrogate/Tracer recovery	Test	Result	Nominal	Recovery %	Acceptable Limits
Thorium-229 Tracer	Alphaspec Th, Solid "Dry Weight Corrected"			79.1	(15%-125%)

J. Christopher 12/10/09

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : Ecology & Environment, Inc.
Address : 3700 Industry Ave.
Suite 102
Lakewood, California 90712
Contact: Ms. Mindy Song
Project: Halaco CAM Metals Analysis

Report Date: November 16, 2009

Client Sample ID: BAG-S-001
Sample ID: 239856008
Matrix: Soil
Collect Date: 23-OCT-09 07:00
Receive Date: 27-OCT-09
Collector: Client
Moisture: 25.9%

Project: ECOL00209
Client ID: ECOL007

Parameter	Qualifier	Result	Uncertainty	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Alpha Spec Analysis												
Alphaspec Th, Solid "Dry Weight Corrected"												
Thorium-228	U	-0.0574	+/-0.169	0.565	1.00	pCi/g		CXM2	11/12/09	1009	916611	1
Thorium-230	U	-0.228	+/-0.148	0.395	1.00	pCi/g						
Thorium-232	U	-0.0244	+/-0.144	0.342	1.00	pCi/g						
Rad Gamma Spec Analysis												
Gammascpec, Gamma, Solid (Standard List) "Dry Weight Corrected"												
Actinium-228	U	-0.0234	+/-0.155	0.232		pCi/g		MXR1	11/03/09	0946	916603	2
Americium-241	U	0.0169	+/-0.159	0.272		pCi/g						
Antimony-124	U	0.00841	+/-0.0813	0.139		pCi/g						
Antimony-125	U	0.0275	+/-0.0779	0.135		pCi/g						
Barium-133	U	-0.00455	+/-0.0402	0.0565		pCi/g						
Barium-140	U	-0.00965	+/-0.184	0.306		pCi/g						
Beryllium-7	U	0.0733	+/-0.257	0.441		pCi/g						
Bismuth-212	U	-0.0838	+/-0.285	0.425		pCi/g						
Bismuth-214	U	-0.0297	+/-0.0892	0.139		pCi/g						
Cerium-139	U	-0.0116	+/-0.0223	0.0375		pCi/g						
Cerium-141	U	0.0431	+/-0.0475	0.0804		pCi/g						
Cerium-144	U	0.0341	+/-0.175	0.288		pCi/g						
Cesium-134	U	-0.0216	+/-0.0383	0.0613		pCi/g						
Cesium-136	U	-0.0308	+/-0.0812	0.134		pCi/g						
Cesium-137	U	0.00333	+/-0.0315	0.0543	0.100	pCi/g						
Chromium-51	U	-0.0271	+/-0.290	0.474		pCi/g						
Cobalt-56	U	0.0139	+/-0.0366	0.063		pCi/g						
Cobalt-57	U	0.00885	+/-0.0203	0.034		pCi/g						
Cobalt-58	U	0.00875	+/-0.0354	0.0607		pCi/g						
Cobalt-60	U	0.037	+/-0.039	0.0709		pCi/g						
Europium-152	U	0.084	+/-0.091	0.147		pCi/g						
Europium-154	U	-0.0555	+/-0.106	0.168		pCi/g						
Europium-155	U	-0.017	+/-0.0858	0.140		pCi/g						
Iridium-192	U	-0.00121	+/-0.0281	0.0461		pCi/g						
Iron-59	U	-0.0221	+/-0.0741	0.123		pCi/g						
Lead-210	U	-31.5	+/-9.78	12.4		pCi/g						
Lead-212	U	0.0141	+/-0.0632	0.101		pCi/g						
Lead-214	U	0.110	+/-0.127	0.128		pCi/g						
Manganese-54	U	0.0105	+/-0.0334	0.0574		pCi/g						
Mercury-203	U	3.60E-05	+/-0.0326	0.0542		pCi/g						
Neodymium-147	U	0.125	+/-0.388	0.662		pCi/g						

JZ Christopher 12/10/09

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : Ecology & Environment, Inc.
Address : 3700 Industry Ave.
Suite 102
Lakewood, California 90712
Contact: Ms. Mindy Song
Project: Halaco CAM Metals Analysis

Report Date: November 16, 2009

Client Sample ID: BAG-S-001
Sample ID: 239856008
Project: ECOL00209
Client ID: ECOL007

Parameter	Qualifier	Result	Uncertainty	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gamma Spec Analysis												
GammaSpec, Gamma, Solid (Standard List) "Dry Weight Corrected"												
Neptunium-239	U	0.0274	+/-0.149	0.246		pCi/g						
Niobium-94	U	-0.0017	+/-0.0323	0.0548		pCi/g						
Niobium-95	U	0.0341	+/-0.033	0.0597		pCi/g						
Potassium-40		6.97	+/-1.39	0.552		pCi/g						
Promethium-144	U	-0.00606	+/-0.034	0.0573		pCi/g						
Promethium-146	U	0.0053	+/-0.0365	0.0622		pCi/g						
Radium-228	U	-0.0234	+/-0.155	0.232		pCi/g						
Ruthenium-106	U	-0.168	+/-0.300	0.470		pCi/g						
Silver-110m	U	0.0158	+/-0.0291	0.0517		pCi/g						
Sodium-22	U	-0.0239	+/-0.0384	0.0602		pCi/g						
Thallium-208	U	0.0335	+/-0.0582	0.0548		pCi/g						
Thorium-234	U	-2.28	+/-1.63	2.29		pCi/g						
Tin-113	U	0.00846	+/-0.035	0.0607		pCi/g						
Uranium-235	U	0.106	+/-0.198	0.297		pCi/g						
Uranium-238	U	-2.28	+/-1.63	2.29		pCi/g						
Yttrium-88	U	0.0291	+/-0.0433	0.0781		pCi/g						
Zinc-65	U	-0.105	+/-0.0771	0.114		pCi/g						
Zirconium-95	U	0.0336	+/-0.0557	0.0985		pCi/g						

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	MXP2	10/28/09	1621	916401

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	DOE EML HASL-300, Th-01-RC Modified	
2	DOE HASL 300, 4.5.2.3/Ga-01-R	

Surrogate/Tracer recovery	Test	Result	Nominal	Recovery %	Acceptable Limits
Thorium-229 Tracer	Alphaspec Th, Solid "Dry Weight Corrected"			97.2	(15%-125%)

J. Christensen 12/10/09

GEL LABORATORIES LLC

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Certificate of Analysis

Company: Ecology & Environment, Inc.
Address: 3700 Industry Ave.
Suite 102
Lakewood, California 90712
Contact: Ms. Mindy Song
Project: Hulaco CAM Metals Analysis

Report Date: November 16, 2009

Client Sample ID: BAG-S-002
Sample ID: 239856009
Matrix: Soil
Collect Date: 23-OCT-09 10:55
Receive Date: 27-OCT-09
Collector: Client
Moisture: 16.9%

Project: ECOL00209
Client ID: ECOL007

Parameter	Qualifier	Result	Uncertainty	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Alpha Spec Analysis												
Alphaspec Th, Solid "Dry Weight Corrected"												
Thorium-228	U	0.238	+/-0.297	0.458	1.00	pCi/g			CXM211/12/09	1009	916611	1
Thorium-230	U	0.151	+/-0.221	0.352	1.00	pCi/g						
Thorium-232	U	0.122	+/-0.201	0.352	1.00	pCi/g						
Rad Gamma Spec Analysis												
Gammascpec, Gamma, Solid (Standard List) "Dry Weight Corrected"												
Actinium-228	U	0.118	+/-0.177	0.316		pCi/g			MXR111/03/09	0955	916603	2
Americium-241	U	-0.258	+/-0.123	0.165		pCi/g						
Antimony-124	U	-0.0396	+/-0.0958	0.145		pCi/g						
Antimony-125	U	-0.0586	+/-0.0978	0.158		pCi/g						
Barium-133	U	0.0484	+/-0.0487	0.0776		pCi/g						
Barium-140	U	0.0636	+/-0.239	0.406		pCi/g						
Beryllium-7	U	0.198	+/-0.339	0.593		pCi/g						
Bismuth-212	U	0.0145	+/-0.341	0.564		pCi/g						
Bismuth-214	U	0.00	+/-0.149	0.174		pCi/g						
Cerium-139	U	-0.0099	+/-0.0272	0.0441		pCi/g						
Cerium-141	U	0.00702	+/-0.0517	0.0863		pCi/g						
Cerium-144	U	-0.0471	+/-0.174	0.284		pCi/g						
Cesium-134	U	0.00476	+/-0.052	0.0861		pCi/g						
Cesium-136	U	0.0485	+/-0.104	0.183		pCi/g						
Cesium-137	U	0.012	+/-0.0427	0.0723	0.100	pCi/g						
Chromium-51	U	0.223	+/-0.356	0.627		pCi/g						
Cobalt-56	U	0.0114	+/-0.0464	0.0809		pCi/g						
Cobalt-57	U	-0.0319	+/-0.0223	0.034		pCi/g						
Cobalt-58	U	-0.00654	+/-0.0456	0.0737		pCi/g						
Cobalt-60	U	-0.00602	+/-0.0526	0.0866		pCi/g						
Europium-152	U	-0.0292	+/-0.108	0.170		pCi/g						
Europium-154	U	0.0915	+/-0.159	0.282		pCi/g						
Europium-155	U	0.118	+/-0.0932	0.164		pCi/g						
Iridium-192	U	-0.00884	+/-0.0356	0.060		pCi/g						
Iron-59	U	-0.0474	+/-0.112	0.182		pCi/g						
Lead-210	U	-3.07	+/-2.21	3.49		pCi/g						
Lead-212	U	0.0486	+/-0.0936	0.127		pCi/g						
Lead-214	U	0.119	+/-0.112	0.147		pCi/g						
Manganese-54	U	-0.00681	+/-0.0443	0.0749		pCi/g						
Mercury-203	U	-0.0105	+/-0.0376	0.0634		pCi/g						
Neodymium-147	U	0.201	+/-0.471	0.813		pCi/g						

JJ Christopher 12/10/09

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : Ecology & Environment, Inc.
Address : 3700 Industry Ave.
Suite 102
Lakewood, California 90712
Contact: Ms. Mindy Song
Project: Halaco CAM Metals Analysis

Report Date: November 16, 2009

Client Sample ID: BAG-S-002
Sample ID: 239856009

Project: ECOL00209
Client ID: ECOL007

Parameter	Qualifier	Result	Uncertainty	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gamma Spec Analysis												
Gammascpec, Gamma, Solid (Standard List) "Dry Weight Corrected"												
Neptunium-239	U	0.0303	+/-0.165	0.277		pCi/g						
Niobium-94	U	-0.0136	+/-0.0419	0.0673		pCi/g						
Niobium-95	U	0.0183	+/-0.0476	0.0808		pCi/g						
Potassium-40		35.5	+/-3.32	0.611		pCi/g						
Promethium-144	U	0.00718	+/-0.0436	0.0729		pCi/g						
Promethium-146	U	-0.0461	+/-0.0538	0.0751		pCi/g						
Radium-228	U	0.118	+/-0.177	0.316		pCi/g						
Ruthenium-106	U	0.086	+/-0.367	0.620		pCi/g						
Silver-110m	U	-0.0433	+/-0.0373	0.0541		pCi/g						
Sodium-22	U	0.0327	+/-0.0569	0.101		pCi/g						
Thallium-208	U	0.0134	+/-0.0623	0.0711		pCi/g						
Thorium-234	U	0.727	+/-1.00	1.66		pCi/g						
Tin-113	U	-0.00148	+/-0.0471	0.0796		pCi/g						
Uranium-235	U	-0.0549	+/-0.215	0.327		pCi/g						
Uranium-238	U	0.727	+/-1.00	1.66		pCi/g						
Yttrium-88	U	0.0239	+/-0.0487	0.0891		pCi/g						
Zinc-65	U	-0.115	+/-0.120	0.185		pCi/g						
Zirconium-95	U	0.0261	+/-0.0787	0.133		pCi/g						

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep.	Dry Soil Prep GL-RAD-A-021	MXP2	10/28/09	1621	916401

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	DOE EML HASL-300, Th-01-RC Modified	
2	DOE HASL 300, 4.5.2.3/Ga-01-R	

Surrogate/Tracer recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Thorium-229 Tracer	Alphaspec Th, Solid "Dry Weight Corrected"			96.4	(15%-125%)

JJ Christopher 12/10/09

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company: Ecology & Environment, Inc.
Address: 3700 Industry Ave.
Suite 102
Lakewood, California 90712
Contact: Ms. Mindy Song
Project: Halaco CAM Metals Analysis

Report Date: November 16, 2009

Client Sample ID: BAG-S-003
Sample ID: 239856010
Matrix: Soil
Collect Date: 23-OCT-09 11:00
Receive Date: 27-OCT-09
Collector: Client
Moisture: 13.9%

Project: ECOL00209
Client ID: ECOL007

Parameter	Qualifier	Result	Uncertainty	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Alpha Spec Analysis												
<i>Alphaspec Th, Solid "Dry Weight Corrected"</i>												
Thorium-228		1.02	+/-0.622	0.613	1.00	pCi/g			CXM211/12/09	1010	916611	1
Thorium-230		1.45	+/-0.709	0.523	1.00	pCi/g						
Thorium-232		0.677	+/-0.472	0.257	1.00	pCi/g						
Rad Gamma Spec Analysis												
<i>Gammascpec, Gamma, Solid (Standard List) "Dry Weight Corrected"</i>												
Actinium-228		0.374	+/-0.266	0.191		pCi/g			MXR111/03/09	0955	916603	2
Americium-241	U	0.0585	+/-0.120	0.183		pCi/g						
Antimony-124	U	0.00906	+/-0.0826	0.141		pCi/g						
Antimony-125	U	0.0107	+/-0.0908	0.155		pCi/g						
Barium-133	U	-0.00735	+/-0.0471	0.0689		pCi/g						
Barium-140	U	-0.00398	+/-0.195	0.328		pCi/g						
Beryllium-7	U	0.112	+/-0.291	0.505		pCi/g						
Bismuth-212	U	0.458	+/-0.277	0.516		pCi/g						
Bismuth-214		0.322	+/-0.148	0.120		pCi/g						
Cerium-139	U	-0.00785	+/-0.0253	0.0411		pCi/g						
Cerium-141	U	-0.00482	+/-0.0558	0.0844		pCi/g						
Cerium-144	U	0.0445	+/-0.172	0.288		pCi/g						
Cesium-134	U	0.0564	+/-0.0497	0.0894		pCi/g						
Cesium-136	U	-0.0766	+/-0.0903	0.141		pCi/g						
Cesium-137	U	0.030	+/-0.0381	0.0673	0.100	pCi/g						
Chromium-51	U	-0.149	+/-0.320	0.532		pCi/g						
Cobalt-56	U	-0.00798	+/-0.0409	0.0661		pCi/g						
Cobalt-57	U	0.00654	+/-0.0217	0.0365		pCi/g						
Cobalt-58	U	-0.0117	+/-0.0408	0.0656		pCi/g						
Cobalt-60	U	0.0234	+/-0.0433	0.0775		pCi/g						
Europium-152	U	-0.109	+/-0.124	0.143		pCi/g						
Europium-154	U	-0.0121	+/-0.120	0.201		pCi/g						
Europium-155	U	0.109	+/-0.0873	0.153		pCi/g						
Iridium-192	U	0.0216	+/-0.0319	0.0563		pCi/g						
Iron-59	U	0.0178	+/-0.0863	0.150		pCi/g						
Lead-210	U	-1.78	+/-2.76	4.20		pCi/g						
Lead-212		0.473	+/-0.123	0.102		pCi/g						
Lead-214		0.357	+/-0.144	0.112		pCi/g						
Manganese-54	U	0.0234	+/-0.0385	0.067		pCi/g						
Mercury-203	U	0.0386	+/-0.037	0.0658		pCi/g						
Neodymium-147	U	-0.0278	+/-0.422	0.705		pCi/g						

J. Christopher 12/10/09

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : Ecology & Environment, Inc.
Address : 3700 Industry Ave.
Suite 102
Lakewood, California 90712
Contact: Ms. Mindy Song
Project: Halaco CAM Metals Analysis

Report Date: November 16, 2009

Client Sample ID: BAG-S-003
Sample ID: 239856010

Project: ECOL00209
Client ID: ECOL007

Parameter	Qualifier	Result	Uncertainty	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gamma Spec Analysis												
<i>GammaSpec, Gamma, Solid (Standard List) "Dry Weight Corrected"</i>												
Neptunium-239	U	-0.005	+/-0.159	0.263		pCi/g						
Niobium-94	U	0.00566	+/-0.0362	0.061		pCi/g						
Niobium-95	U	-0.0253	+/-0.0419	0.0655		pCi/g						
Potassium-40		17.7	+/-1.95	0.592		pCi/g						
Promethium-144	U	-0.0285	+/-0.0345	0.0529		pCi/g						
Promethium-146	U	0.00272	+/-0.0419	0.0712		pCi/g						
Radium-228		0.374	+/-0.266	0.191		pCi/g						
Ruthenium-106	U	-0.365	+/-0.325	0.486		pCi/g						
Silver-110m	U	-0.0376	+/-0.0373	0.0565		pCi/g						
Sodium-22	U	-0.0123	+/-0.0436	0.0715		pCi/g						
Thallium-208		0.201	+/-0.0657	0.0599		pCi/g						
Thorium-234	U	0.633	+/-1.24	1.57		pCi/g						
Tin-113	U	0.0124	+/-0.0414	0.0717		pCi/g						
Uranium-235	U	-0.122	+/-0.203	0.297		pCi/g						
Uranium-238	U	0.633	+/-1.24	1.57		pCi/g						
Yttrium-88	U	0.0165	+/-0.0422	0.0747		pCi/g						
Zinc-65	U	-0.0897	+/-0.0931	0.144		pCi/g						
Zirconium-95	U	-0.0853	+/-0.0694	0.0997		pCi/g						

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	MP2	10/28/09	1621	916401

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	DOE EML HASL-300, Th-01-RC Modified	
2	DOE HASL 300, 4.5.2.3/Ga-01-R	

Surrogate/Tracer recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Thorium-229 Tracer	Alphaspec Th, Solid "Dry Weight Corrected"			80.4	(15%-125%)

J. Christopher 12/10/09

20071055866 (oil, only)

Page 3 of 4		GEL Chain of Custody and Analytical Request		GEL Laboratories, LLC 2040 Savage Road Charleston, SC 29407 Phone: (843) 556-8171 Fax: (843) 766-1178	
Project #: 002693-2053-012A05		GEL Work Order Number: 2398510			
COC Number: 01		Client Name: Ecology and Environment, Inc.		Phone #: _____	
PO Number: _____		Project/Site Name: _____		Fax #: _____	
Address: _____					
Collected by: <i>[Signature]</i>		Send Results To: <i>msng@ecm.com</i>			
Sample ID	Date Collected (mm-dd-yy)	*Time Collected (Military) (hh:mm)	QC Code (a)	Field Filtered (b)	Sample Matrix (c)
BAG-M-1015	10/22/07	1707	FD		P
SME-S-001	10/22/07	0310	N		SO
SME-S-002	10/23/07	1030	N		SO
SME-S-003	10/23/07	1035	N		SO
SME-S-1003	10/23/07	1037	PD		SO
SME-S-004	10/22/07	0830	N		SO
SME-S-005	10/23/07	1042	N		SO
SME-S-006	10/23/07	1110	N		SO
BAG-S-001	10/23/07	0700	N		SO
BAG-S-002	10/23/07	1055	N		SO
<p>TAT Requested: Normal Rush: Specify: (Subject to Exchange) Fax Results: Yes / No</p> <p>Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards</p> <p><i>8015M for TPH/Diesel & Motoroil</i></p>					
Chain of Custody Signatures			Sample Shipping and Delivery Details		
Relinquished By (Signed)	Date	Time	Received by (Signed)	Date	Time
<i>[Signature]</i>	10/26/07	1330	<i>R.M. Willey</i>	10/24/07	900
2			Method of Shipment:		
3			Airbill #:		
1) Chain of Custody Number = Client Determined			GEL PM:		
2) QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, C = Grab, C = Composite			Date Shipped:		
3) Field Filtered: For liquid matrices, indicate with a - Y - for yes the sample was field filtered or - N - for sample was not field filtered.			Airbill #:		
4) Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W=Water, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, P=Filter, P=Filter, U=Urine, F=Fecal, N=Nasal			Airbill #:		
5) Sample Analyte Requested: Analytical method requested (i.e. 8268B, 6010B/1707A) and number of containers provided for each (i.e. 4260B - 3, 6010B/1707A - 1).			Airbill #:		
6) Preservative Type: EA = Hydrochloric Acid, NH = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Acetic Acid, IX = Hexane, ST = Sodium Thiosulfate. If no preservative is added - leave field blank			Airbill #:		
For Lab Receiving Use Only			Custody Seal Intact?		
			(Yes) NO		
			Cooler Temp:		
			5 C		

WHITE = LABORATORY

YELLOW = FILE

PINK = CLIENT

